

173 bids given as recruitment ends

Panhel says 2011 saw increased interest and recruit retention

By Wyliena Guan

Sorority recruitment wrapped up on Sept. 7 with 173 women receiving bids. Recruitment this year was marked by a higher retention rate — the number of people who stick through formal recruitment — and by more women applying for recruitment sooner.

“This year was really great because there was more publicity earlier, so ... more girls signed up earlier,” said Kimberly M. Sparling ’12, Panhellenic Council president. She believes that the earlier a girl signs up, the more likely she is to stick with recruitment.

Though Pi Beta Phi acquired a residence at 405 Memorial Drive this year, the recruitment numbers for their third fall recruitment were not significantly affected. The building will open to residents next year.

Anne P. Runkle ’11, vice president of Panhel for recruitment, said that the number of bids this year was average, given that sororities had in total about 190 bids for each of the previous two years and 120 bids in the fall of 2008. She added, “A couple of juniors went through this year ... [and] about a

sixth of the girls who went through were sophomores.”

The number of bids issued is usually the same or very close to the number of bids accepted.

Sorority recruitment is a five-day process open to female students from any class year. During the first two days, potential new members visit all six chapters on campus: Alpha Chi Omega, Pi Beta Phi, Kappa Alpha Theta, Alpha Phi, Sigma Kappa, and Alpha Epsilon Phi.

Recruits spend the first day talking with each sorority for 30 minutes. On the second day, the recruits visit all of the houses, where the sisters show them around and get to know them. During the next two days, all of the chapters except Alpha Epsilon Phi conduct formal recruitment; on the third day, recruits can return to as many as four participating chapters, two of which they may revisit for longer periods of time on the fourth day. During this revisitation period, each recruit is matched with a sister who can best introduce her to the sorority. Finally, recruits rank their top two sororities. The

Recruitment, Page 22

Alchemist to call MIT home



ELAINE M. KUNG

Alchemist, originally on loan for the duration of MIT’s 150th anniversary celebration, can now call the Institute home. The sculpture, which sits between the Student Center and Massachusetts Avenue, represents a thinking man comprised of numbers and math functions.

The sculpture was commissioned by an anonymous alumnus and was gifted to the Institute “in honor of all the alumni who have helped support MIT over the years.” According to Associate Provost Philip S. Khoury, the alumnus did not plan to make the donation permanent, but after visiting the campus during the 150th anniversary celebration, he “was so moved by the events ... that he decided to gift the sculpture.”

The sculpture is now covered under MIT’s art insurance policy, and maintenance costs will be paid using a fund provided by the donor.

Alchemist is the latest addition to MIT’s extensive public art collection. The many works around campus show that “the arts matter at MIT ... the arts are really all about the creative process, and that’s what we do in math and science and engineering [as well],” said Khoury.

Jaume Plensa, the renowned Catalan sculptor behind *Alchemist*, has designed several similar sculptures. His works *Nosotros*, *Nomade*, *House of Knowledge*, and *I, You, She or He* all utilize the same body structure as *Alchemist*, but are comprised of different symbols. Plensa’s sculptures can be found all over the world from Paris to the United Kingdom to Japan.

Alchemist, already a familiar sight to students, can now be recognized as a permanent landmark on campus.

—Janelle Mansfield

Questions raised over startup’s integrity

Clean energy prize winner CoolChip faces scrutiny, MIT will ‘review the facts’

By Anne Cai

ASSOCIATE NEWS EDITOR

Winning the Grand Prize in MIT’s \$200K Clean Energy Prize contest in May was only the beginning of an MIT startup’s success. CoolChip Technologies, which develops cooling systems for electronics, was automatically entered as a finalist in the MIT \$100K Business Plan Contest as a result of winning the CEP. CoolChip has also been covered by *CNN Money*, the *Wall Street Journal*, the *Boston Globe*, and *Electronic Engineering Times* since their CEP win. At the end of August, however, an article in the *Chronicle of Higher Education* cast a shadow over the success of the young company.

The *Chronicle* pointed out that CoolChip’s prizewinning cooling technology was actually Sandia National Laboratories’ own device, designed by researcher Jeffrey Koplow. According to the article, CoolChip CEO William R. Sanchez ’05 approached Koplow in February asking to use the unpatented Sandia cooler for CoolChip’s CEP submission. Koplow told Sanchez he did not have the authority to make that decision and directed him to Sandia’s technology-transfer department. According to a Sandia spokesman, that was the last “substantial communication” Sanchez had with Sandia — no deals were made and no permissions were granted to CoolChip to use Sandia’s cooling technology. The technology was also not open for licensing at the time.

In a presentation as part of the MIT \$100K Business Plan Contest, Sanchez did not refer to Sandia while he used

Energy prize, Page 10

Castillo death ruled suicide

According to an article published by the *Boston Globe* on Tuesday, the death of Nicolas E. Del Castillo ’14 has been ruled a suicide by the medical examiner’s office. Castillo’s death certificate, filed on Monday, lists his cause of death as asphyxia. Castillo’s body was found in his room on the 4th floor of East Campus’ West parallel on Sunday, Sept. 4.

Castillo was born on Aug.

13, 1993 in Bogotá, Colombia. He entered MIT in fall 2010 and planned to major in mathematics. In an obituary written by the MIT News Office, Chancellor Eric Grimson PhD ’80 called Castillo’s death “a tragedy for the MIT community.”

A memorial service was held on Sunday at the MIT chapel. Castillo’s parents were in attendance.

—Stan Gill

IN SHORT

Comedian John Oliver will be performing at the Fall Festival, sponsored by the UA Events Committee.

Sunday is the last day to waive the student health plan! Waivers are accepted at <http://med-web.mit.edu/>.

The MIT Career Fair is next week on Wednesday, Sept. 21, a student holiday. Bring your résumés!

Vote for the UA Senate and 2015 Class Council today via paper ballot in the Student Center.

Balfour will be on campus next week for questions or concerns about Brass Rats. Stop by Walker from 6 to 7 p.m. or W20 on Wednesday from 10 a.m. to 3 p.m. if you need a resize or replacement!

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

We’re number five!

MIT is in a five-way tie for fifth place in U.S. News and World Report’s 2012 national university rankings. The Institute took the No. 5 spot along with Caltech, Stanford, UChicago, and UPenn. Harvard and Princeton tied for the No. 1 spot, followed by Yale in third and Columbia in fourth.

MIT was 7th in the 2011 rankings — also tied with Caltech — but most of the top ten’s rankings fluctuate a little from year-to-year. Harvard has maintained its No. 1 spot since the 2011 rankings.

And while the Institute was not top dog overall, MIT did claim first in many science and engineering graduate school rankings, released earlier this year. USNWR anointed MIT the best engineering school, followed by Stanford and UC Berkeley. MIT was also No. 1 in the science specialties of

This year, USNWR ranked MIT as the

5th best national university in the United States.

Four other schools tied with MIT for fifth place: Caltech, Stanford, University of Chicago, and UPenn.

5 of MIT’s graduate science programs were ranked #1

Chemistry
Computer science
Earth science
Math
Physics

chemistry, computer science, earth sciences, mathematics, and physics (some were ties).

Sloan was ranked the third best business school, behind Stanford and Harvard.

—Ethan A. Solomon

MIT was also ranked as having the **#1 graduate engineering program in the US**

6 of MIT’s graduate engineering departments were ranked #1

Aerospace engineering Chemical engineering
Computer engineering Electrical engineering
Materials engineering Mechanical engineering

Other high-ranking graduate programs include economics (#1), biology (#2), and business (#3)

INFOGRAPHIC BY CONNOR KIRSCHBAUM

THE GOOD, THE BAD, THE TASTY

A new Maseeh resident shares his thoughts on the controversial dining plan. **OPINION, p. 4**

WHEN DEX MET EM

And the 20 years that followed. **ARTS, p. 8**

HAVE YOU CAUGHT *CONTAGION*?

This is one bug worth getting. **ARTS, p. 7**



THE BEAUTIFUL AND THE NERDY

See where *Tech* photographers went this summer! **PHOTO, p. 13**

FOOTBALL IS FINALLY BACK

And this season is already shaping up to be an interesting one. **SPORTS, p. 24**

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US to seek fines on oil firms for Gulf spill

By Jennifer A. Dlouhy
HEARST NEWSPAPERS

WASHINGTON — The federal government will seek to fine BP, Transocean and Halliburton for violations tied to the Deepwater Horizon disaster, the nation’s top offshore drilling regulator said Thursday.

The process will begin as soon as next week when the Bureau of Ocean Energy Management, Regulation and Enforcement accuses the companies of violating seven offshore drilling regulations in connection with the Deepwater Horizon disaster.

The ocean energy bureau is “developing the proposed notices of violations,” which could be issued “as early as next week,” said Michael Bromwich, the agency’s director.

The notices kick off a procedure for imposing civil fines against each of the three firms, up to a maximum penalty of \$35,000 per day, per incident.

In the case of the oil spill, violations may have covered 87 days — the time crude was gushing into

the Gulf — or longer, creating a potential tab per incident of \$3.05 million. Collectively, the bill for all seven companies could be as high as \$39.59 million, based on 87 days of infractions.

The ocean energy bureau’s sanctions are separate from any fines or other penalties that are expected to be imposed under the Clean Water Act, which could reach to \$21 billion for BP, based on estimates that its Macondo well gushed 4.9 million barrels of oil into the Gulf of Mexico.

Under the Clean Water Act, BP can be ordered to pay at least \$1,100 per barrel of spilled oil and up to \$4,300 per barrel if the company is deemed grossly negligent.

A joint investigation by the Coast Guard and the ocean energy bureau concluded Wednesday that the three firms responsible for much of the work at the Macondo well had collectively run afoul of seven offshore regulations, such as failing “to take necessary precautions to keep the well under control at all times.”

Individually, BP was found to have violated seven regulations;

Transocean, three; and Halliburton, (via its subsidiary Sperry Sun) three.

For instance, the panel concluded that all three companies broke requirements for preventing conditions posing “unreasonable risk to public health, life, property, aquatic life . . . or other uses of the ocean.”

Additionally, BP and Transocean were flagged for defying a mandate for inspections of blowout preventers that are a final safeguard against surging oil and gas.

BP said it would not comment on the penalties; Transocean and Halliburton did not respond to requests for reaction.

The Obama administration boosted the maximum fees for violating the Outer Continental Shelf Lands Act from \$35,000 to \$40,000 per violation, per day in June, to keep up with inflation.

But that was as far as the ocean energy bureau could go administratively. Although federal law empowers the government to make the inflation adjustment at least once every three years, bigger changes are largely up to Congress.

White House weighs limits of terror fight

By Charlie Savage
THE NEW YORK TIMES

WASHINGTON — The Obama administration’s legal team is split over how much latitude the United States has to kill Islamist militants in Yemen and Somalia, a question that could define the limits of the war against al-Qaida and its allies, according to administration and congressional officials.

The debate, according to officials familiar with the deliberations, centers on whether the United States may take aim at a handful of high-level leaders of militant groups who are personally linked to plots to attack the United States or whether it may also attack the thousands of low-level foot soldiers focused on parochial concerns: controlling the essentially ungoverned lands near the Gulf of Aden, which separates the countries.

The dispute over limits on the use of lethal force in the region — whether from drone strikes, cruise missiles,

or commando raids — has divided the State Department and the Pentagon for months, although to date it remains a merely theoretical disagreement. Current administration policy is to focus on “high-value individuals” in the region, as it has tried to do about a dozen times. But the unresolved question is whether the administration can escalate attacks if it wants to against rank-and-file members of al-Qaida in the Arabian Peninsula, based in Yemen, and the Somalia-based al-Shabab.

The answer could lay the groundwork for a shift in the fight against terrorists as the original al-Qaida, operating out of Afghanistan and Pakistan, grows weaker. That organization has been crippled by the killing of Osama bin Laden and by a fierce campaign of drone strikes in the tribal regions of Pakistan, where the legal authority to attack militants who are battling U.S. forces in adjoining Afghanistan is not disputed inside the administration.

One senior official played down

the disagreement Thursday, characterizing it as a difference in policy emphasis, not legal views. Defense Department lawyers are trying to maintain maximum theoretical flexibility, while State Department lawyers are trying to reach out to European allies who think that there is no armed conflict, for legal purposes, outside of Afghanistan, and that the United States has a right to take action elsewhere only in self-defense, the official said.

But other officials insisted that the administration lawyers disagreed on the underlying legal authority of the United States to carry out such strikes.

Robert Chesney, a law professor at the University of Texas, Austin, who specializes in the laws of war, said the dispute reflected widespread disagreement about how to apply rules written for traditional wars to a conflict against a splintered network of terrorists — and fears that it could lead to an unending and unconstrained “global” war.

Striking prediction: Abundance of US oil

By Tom Fowler
HOUSTON CHRONICLE

A new report that predictably found huge potential natural gas supplies in the U.S. also contained news its own writers found surprising — that oil is more abundant than they thought.

The study released Thursday by the National Petroleum Council, a collection of industry, academic, government and other officials convened by the secretary of energy, touted how advanced technology has unlocked vast formations of natural gas previously deemed uneconomic to tap .

But the report also said the same drilling and production techniques that opened up shale gas — combined with success in the deep-water Gulf of Mexico, the Canadian oil sands and even surges in conventional oil onshore - are improving the nation’s potential to be more self-reliant for oil, according

to the report.

“Contrary to conventional wisdom the North American oil resource base also could provide substantial supply for decades ahead,” the report said.

By 2035, oil from shale formations — also referred to as “tight oil” — could produce 2 million to 3 million barrels of oil per day. That includes plays such as the Bakken shale in the Northern U.S. and the Eagle Ford shale in South Texas.

Under the most optimistic assumptions the U.S. and Canada combined could produce up to 22.5 million barrels per day, the study concludes. But that isn’t likely to wean the U.S. off oil imports from overseas, the report warns, as its current daily demand already is 22.5 million barrels per day.

The potential growth of U.S. oil production is manifest on several fronts.

Texas’ oil and gas industry em-

ployment returned to its pre-recession highs in June, according to the Texas Petroleum Index, topping the last boom that peaked in October 2008.

That boom was fueled largely by the transformation of the natural gas drilling and production business, but Texas economist Karr Ingham said the expansion is driven by Texas returning to its crude oil roots.

And earlier this month, Goldman Sachs said in a note to investors it expects the U.S. - now the No. 3 oil producer behind Saudi Arabia and Russia - to take the top spot by 2017.

The National Petroleum Council, a collection of industry, academic, government and other officials, convenes several times a year to gather information, give advice and issue reports on topics for the secretary of energy. The most recent report was a 2007 study on global energy supply and demand.

Palestinians resist appeals to halt UN statehood bid

JERUSALEM — Senior U.S. and European diplomats tried without success Thursday to persuade the Palestinian leaders to skip or modify their planned U.N. membership bid, officials involved said.

Riad Malki, the Palestinian foreign minister, told foreign journalists in Ramallah that the Palestinians would continue to listen to suggestions but that barring something very persuasive, President Mahmoud Abbas of the Palestinian Authority would submit a full membership application to the Security Council next Friday.

Another Palestinian official said Abbas told Dennis B. Ross, a top U.S. diplomat: “We appreciate the American role but you are too late. We have reached the moment of truth, and we are going to the Security Council.”

The United States has said it would use its veto there because it believes that the only way to Palestinian statehood is through direct negotiations with Israel.

“There was one suggestion that Palestine would be given some of the attributes of a state so that it could get funding from the World Bank, for example, but would not now seek membership in the U.N.,” the Palestinian official said, speaking anonymously in accordance with diplomatic protocol. “Another was for a resumption of negotiations based on the 1967 lines, but it didn’t include an Israeli settlement freeze. We rejected both ideas.”

There is still some discussion, however, of skipping the Security Council and going directly to the General Assembly, where there is no veto and where a majority is guaranteed. In that case, the Palestinians would be granted the status of a nonmember state while sparing the U.S. the damage to its standing in the Arab world that it would suffer from using its Security Council veto.

—Ethan Bronner, *The New York Times*

Customers angry over revamped pricing are deserting Netflix

Some of Netflix’s popularity lies in its simplicity — in its ability to serve up films and TV shows and renew subscriptions automatically, without any thinking on the part of the customer.

Until now, that is.

A new pricing scheme is forcing Netflix’s 25 million customers to think about which service they want — access to online streams, access to DVDs by mail or both — and some have decided to rethink the monthly splurge entirely.

On Thursday, the company said that customers were canceling their subscriptions in greater numbers than it expected, about 1 million in total, causing a projected quarterly loss in customers for only the second time in its history. The company did not signal a shift in direction or a change its financial guidance for the quarter; still, its stock dropped almost 19 percent in heavy trading Thursday, closing at \$169.25 and worsening a season-long selling streak. In July, the stock peaked at \$304.79.

The downward revision reflects the negative reaction to Netflix’s decision, announced in July and adopted this month, to separate its DVD-by-mail service from its faster-growing Internet streaming service. Before, DVD-by-mail was a \$2 add-on for some streaming subscribers; now, each service costs \$8.

Netflix’s subscriber base had been on a reliably upward trajectory since its founding more than a decade ago, with one slight exception in 2007. The company — widely praised for making it easy to stream films and some TV shows via the Internet — had 24.6 million customers at the end of the second quarter of the year, when it last reported figures to investors. Back then, it expected that it would end the third quarter with 25 million, 3 million of whom would opt only for the DVD service.

But early Thursday morning it lowered its subscriber estimates for the third quarter, which ends in two weeks, to an expected total of 24 million, a quarterly decline of 600,000.

The decline is due in large part to customers who were unhappy about the price changes. Netflix now expects that 2.2 million customers will opt for DVDs by mail only.

—Brian Stelter, *The New York Times*

Skilling files high court appeal

Former Enron CEO Jeff Skilling is asking the U.S. Supreme Court to hear his appeal of an April decision by an appeals court that found errors made by prosecutors were “harmless.”

Skilling, convicted on 19 out of 28 charges following a 2006 jury trial, appealed those verdicts all the way up to the U.S. Supreme Court last year.

The Supreme Court ruled in June 2010 that one of the theories behind the conviction for conspiracy - the honest-services fraud theory - should not have been used in instructions given to the jury. Honest services fraud is defined as a company officer depriving a company “of the intangible right of honest services.”

The high court sent the issue back to the 5th U.S. Circuit Court of Appeals to determine if the use of the theory invalidated any of the charges. The 5th Circuit said it found the error to be “harmless,” however, saying there was ample evidence to allow the jury to convict based on other theories used by prosecutors.

In the appeal of the 5th Circuit decision filed earlier this month, Skilling’s attorneys said they are challenging the “harmless error” argument and the argument a defendant’s testimony can be categorically disregarded in such a review.

“Skilling’s petition will demonstrate that the Court’s holdings on both of these questions conflict with the decisions of other circuits and with Supreme Court precedent, and that both questions involve legal issues of nationwide importance in the demonstration of harmless-error review,” the filing says.

Skilling still will be resentenced by U.S. District Judge Sim Lake based on a prior ruling from the appeals court that the Houston judge applied federal sentencing guidelines improperly. A date for resentencing has not been set.

—Tom Fowler, *Houston Chronicle*

WORLD&NATION WORLD&NATION WORLD&NATION WORLD&NATION WORLD

How much credit does Perry deserve?

Like everything in politics, it depends upon who you ask

Rick Perry, from Page 4

R: Sounds like someone's bitter that their "green jobs" experiment failed.

D: What I'm saying is, Texas isn't laying down any of the framework to create jobs; ipso facto, the job growth is luck. For example, their educational system is terrible.

R: It isn't terrible; it's at the national average. And it's only average because states with high immigrant populations tend to do poorly on standardized reading exams.

D: It's not just education — the crime trends there are worse than those in the rest of the nation too.

R: Texas took in a lot of Katrina victims. It wasn't the only state to experience a rise in crime as a result.

D: So you're blaming Texas' education record on immigrants, and their crime on displaced African-Americans. At any point do you stop and ask yourself, "Am I racist?"

R: It's not racism, it's statistics.

D: Moving on. Even if Texas were great, there's nothing to prove that Rick Perry is the cause.

R: So what?

D: What do you mean, “So what?” If Texas succeeds because it’s Texas, then Rick Perry isn’t some brilliant policy maker, he’s just a bible-thumping, gun-toting, crony-capitalist with a lust for power and a—

R: Running against a smooth-talking political light-weight who came of age in the dirty machine politics of Chicago? We can name-call with the best of them, if that's your idea of politics. No, what I'm saying is this: perhaps the Texas Miracle is due to Texas's naturally conservative system of government, maybe it's due to Rick Perry's exemplary leadership. Who cares? Whether it's the right ideology or the right management, Perry's got it and Obama hasn't.

D: First off, the “Texas Miracle” isn’t a miracle. Secondly, even if it were, it’s due to neither the state’s system of government nor

its leadership; it's because the state has oil and the price of oil is through the roof. And finally, even if the state's success were due to ideology or leadership, there's still no guarantee that it would scale up to the national level.

R: Maybe it's as you say, and government has nothing to do with it. Maybe it's all just the price of oil. But then how do you explain Arizona and Utah, the runners-up in the category of most jobs created? They don't have oil. What they do have are right-to-work laws that prevent labor cartels from strangling job creators, low taxes that encourage a man to work by letting him keep what he has earned, and a light regulatory touch that does the necessary tasks of government without stifling entrepreneurship. These are all policies that scale to a national level.

D: I think I've heard this schtick before. I recall another Texas governor who, in a shorter time than Perry, created over a million jobs for his state. Then, he went to

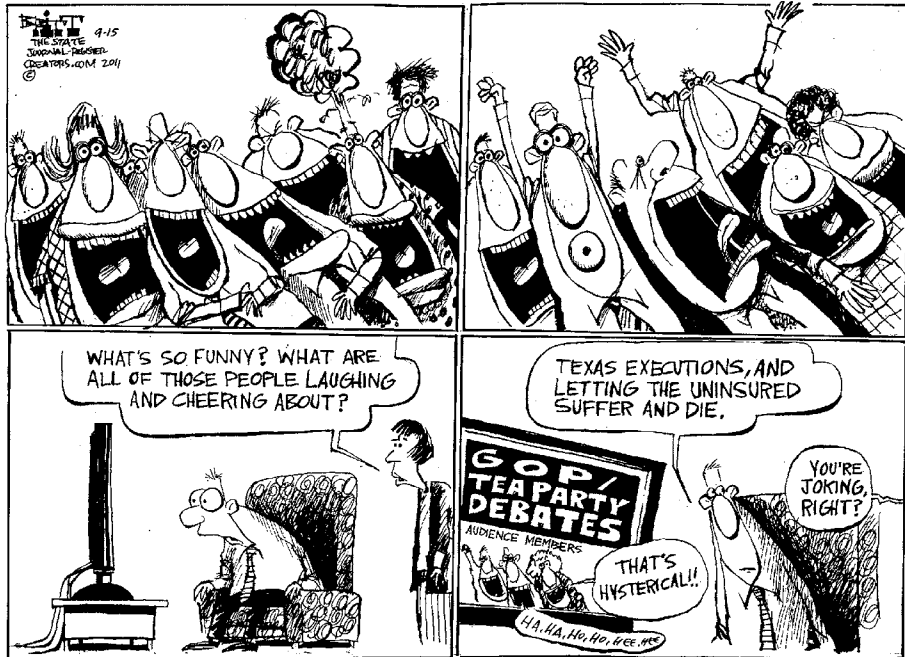
Washington full of ideas about low taxes and deregulation, and got eight years to make his nation as prosperous as his home state. I forget — how did he do?

R: Is this the only campaign strategy you know? Pretend your opponent is George W. Bush and live out your political revenge fantasies? Your obsession with the man is sick.

D: Our obsession? You've nominated a yall'n, draw'n, C+ student cum military pilot cum Texas governor after he told you he didn't believe in evolution or global warming. Somewhere out there, Jeb Bush is pistol-whipping the political advisor that told him the nation wasn't ready for a third Bush, and who can blame him? As it turns out, the Republican party isn't just ready for a third Bush — it's the only candidate they'll accept.

R: Even a third Bush would be better than Obama.

D: I guess we'll find out on election day, won't we?



Susie: Hey Ethan!

Ethan: What's up?

Susie: I'm looking for a job on campus. Do you have any ideas? I like programming and computers.

Ethan: You should join the technology department at The Tech! We pay \$14/hr.

Ethan: You get to learn valuable job skills too!

Susie: Cool, but what if I don't know that much yet?

Ethan: We've got people who can help you out.

Ethan: E-mail join@tech.mit.edu
and we'll send you more info!





like scheme, x windows, kerberos, and athena,

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MOVIE REVIEW

A nerd-worthy pandemic

Steven Soderbergh's *Contagion* is more than the usual thriller

By Bogdan Fedeles

STAFF WRITER

Imagine the chilling prospect of a deadly pandemic throwing the entire world into chaos. In *Contagion*, Academy Award winner Steven Soderbergh takes us on a high-pace cinematic experience depicting the emergence of a novel, highly contagious viral pathogen, and mankind's dramatic struggle to contain the disease and find a cure. Unlike other disaster movies, the science behind *Contagion* is highly plausible and described in significant detail, often making the movie feel like a documentary — it's appealing to the typical (nerdy) MIT crowd. Additionally, the movie features a star-studded cast — a key element for closely connecting with the audience and delivering an intense psychological drama. While highly ambitious and far-reaching, *Contagion* succeeds in being both an original artistic movie and an entertaining thriller.

Narratively, *Contagion* is a collection of disparate stories that become intertwined as they start relating to the pandemic. At least throughout the first half, the movie focuses primarily on the disease and its relentless spread. For those acquainted with the Pandemic series of video games or board games, the movie will feel eerily familiar. As the body count mounts, the Center for Disease Control (CDC) takes center stage and starts working around the clock to deal with the pandemic. The educational bent here is hardly veiled and I suspect the movie will quickly make it into curricula of many epidemiology and ethics programs.

But the movie never becomes an action flick with heroes that save the day. Instead, it zooms in on the psychology of the main characters as they develop conflicting interests and ulterior motives while struggling for survival. Meanwhile, in the background, the overwhelming fear of the impending disaster sends the civi-



COURTESY OF CLAUDETTE BARIUS, WARNER BROS. PICTURES

Jude Law as blogger and conspiracy theorist Alan Krumwiede in *Contagion*.

lized world into bouts of desperation and chaos.

Cinematographically, the movie is as uncompromising as any of Soderbergh's previous great hits. The dramatic juxtaposition of fragmented stories with the greater narrative strongly recalls *Traffic* (2000), for which Soderbergh won an Oscar for best director. Casting an exceptional number of Academy Award nominees and winners — a typical Soderbergh

move — harks back to the *Oceans* series (2001, 2004, 2007). Highly artistic camera angles, including a predilection for tight angles, deep shots instead of wide angle shots, together with the obsessive attention to detail, contribute to a truly scrumptious viewing experience. To top it off, Soderbergh brings in his long time collaborator Cliff Martinez to pen an exquisite score — a perfect coagulant for the ever-branching plot lines. The music, an original blend of techno-rave with elements of electronic and spectral music, is more reminiscent of computer games than blockbuster movies, yet it is an uncanny fit for *Contagion*.

It goes without saying that the movie benefits tremendously from the top-notch acting. Interestingly, most stars are cast in somewhat atypical roles. We wait long and hard for Matt Damon to start kicking ass *Bourne Identity*-style, but in the end, all we get from Damon is a mix of discom-bobulated gazes and desperate poses. That is, however, much better than Gwyneth Paltrow, who does most of her acting after she succumbs to the virus, in a particularly disturbing, hair-raising (literally!) autopsy scene. Kate Winslet performs on a more familiar turf as a CDC field operative and her acting, albeit brief, is very moving. Jude Law also delivers an incredibly poignant performance. As a full time blogger, conspiracy theorist, and hack medical expert, he preys on the ignorant, the uneducated, and the desperate, embodying the scientists' worst nightmare. Opposing him

★★★★☆

Contagion

Directed by Steven Soderbergh

Starring Matt Damon, Kate Winslet and Jude Law

Rated PG-13

Now Playing

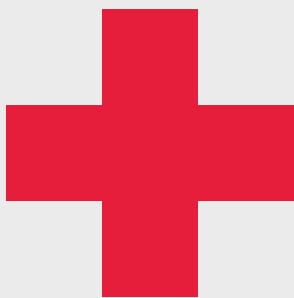
is the head of the CDC, played by Lawrence Fishburne, who puts on a remarkably stoic performance. As a World Health Organization epidemiologist, Marion Cotillard adds a refreshing international flavor to the cast and delights through her naturally mild mannered acting.

While not your typical disaster movie, *Contagion* is as thrilling as it is informative. I recommend *Contagion* not only on artistic grounds, but also from a life scientist's perspective. As a movie that features crystal structures of proteins, epidemiology statistics, recombinant DNA and molecular biology in a scientifically accurate, yet still comprehensible presentation, this is the film all life scientists have been waiting for. True, it may not help you pass your next 7.012 test, but it will certainly get you intrigued with biology — and bats.



COURTESY OF CLAUDETTE BARIUS, WARNER BROS. PICTURES

Even the slightest contact can spread the virus: Gwyneth Paltrow stars in *Contagion*.



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Give Blood.

Your blood donation will help save the life of a patient with cancer, heart disease, gastrointestinal disease, anemia, fractures and trauma, liver, kidney and lung disease, or bone and joint disease.

Monday, September 19, 1pm–6pm
Tuesday, September 20, 8am–1pm
Wednesday, September 21, 1pm–6pm
Thursday, September 22, 1pm–6pm
Friday, September 23, 1pm–6pm

Student Center, 2nd Floor

La Sala, Student Center

It is MIT policy to allow employees time off with pay to donate blood at the drives that are sponsored on campus. For more information or to make an appointment,

visit: <http://web.mit.edu/blood-drive/www/>

Blood Drives are sponsored by ARCTAN, MIT's American Red Cross Team and Network.

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Justice is sweet and musical, but injustice is harsh and discordant. - Thoreau



Sponsored by: MIT Students For Bhopal - www.bhopal.net

Sound of Struggle: 26th Movement

Performed by Pavitra Kumar (piano) & Frank Graves (violin)

- # Piano Sonata No. 8 in B flat major, Op. 84 (Sergei Prokofiev, 1891-1953)
- # Sonata in F major for Violin and Piano (Felix Mendelssohn, 1809 -1847)
- # Nocturne for Piano "Homage to John Field", Op. 33 (Samuel Barber, 1910-1981)
- # Piano Sonata in E-flat minor, Op. 26 (Samuel Barber, 1910 - 1981)

On Saturday, September 17th at 6 pm, in Killian Hall, MIT

Admission: \$10 (General), \$5 (Students) Proceeds go to survivors of the Bhopal Gas Disaster

For tickets, call 617-610-4120 or email rkhanna24@gmail.com or visit www.boston4bhopal.org/soundofstruggle

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Information Session
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Energy prize rules will be reviewed, says MIT

CoolChip fiasco draws attention to ambiguities in \$200K clean energy competition

Energy prize, from Page 1

Koplow’s illustrations to explain the technology. Sanchez said the presentation was meant to be light-hearted and “something for fun,” according to the *Chronicle*. Sanchez also said that Sandia officials told him CoolChip could not use Sandia’s name publicly, preventing him from giving them proper credit. But Sandia spokesman Michael Janes told the *Chronicle* that

Sandia insists its images be credited properly. Also at issue is the philosophy behind the CEP. When interviewed by the *Chronicle*, CEP chairman and Sloan professor William Aulet referred to the contest as an “academic exercise,” more about creating a business plan than the underlying technology. However, Michael J. Pomianek, one of the CEP judges and an intellectual-property lawyer, told the *Chronicle* that judges did not ap-

proach the competition as a “class exercise,” — they considered the participants’ viability and relationships with customers and clients in addition to their business plan. CoolChip Technologies was founded by a team consisting of MIT graduate students: Sanchez, currently an EECS doctoral candidate; Steven J. Stoddard ’06 of the Leaders for Global Operations (LGO) program jointly run by Sloan and the School of Engineering; and Sloan MBA student Daniel A. Vannoni. The team grew out of the energy ventures class taught by Aulet. Sanchez, Stoddard, and Vannoni did not respond to requests for comment.

MIT’s response

“When we became aware of the circumstances with CoolChip, we alerted both the Department of Energy and MIT of the situation,” wrote Janes in an email to *The Tech*. “[MIT] will conduct any follow up that they deem appropriate regarding the Clean Energy Prize, as this is clearly an academic issue best handled by MIT.” Chancellor Eric Grimson PhD ’80 said he will be working with the leadership of the Clean Energy Prize to review what happened. “I want to emphasize that this is not an investigation,” said Grimson. “Allegations have been made, and we want to review the facts to see what really happened.” He also said the community should keep in mind that “everything might not be as described.” The rules for the Clean En-

ergy Prize refer to the MIT’s academic integrity policies and to the Institute Regulations on Intellectual Property Rights. The CEP rules state, “it is the responsibility of the entrant to ensure that no third party [...] has any rights on the contents, which may prevent its exploitation.” According to Janes, Sandia has “informed [CoolChip] how to easily reference Sandia work in the future without implying our endorsement for their work.” After communicating with MIT and CoolChip, Sandia deemed the attribution issue closed. The cooling technology in question is now patent-pending and open for licensing, and according to Janes, they have had “dozens of inquiries and more than twenty companies indicating their interest in the technology.” CoolChip will “have the same opportunity to license this technology as other companies,” wrote Janes. “They will be evaluated on their own merits, i.e. their business plan and ability to successfully manufacture the technology and get it into the marketplace.” As for the future of the CEP, “we will be working to decide on and clarify the goals of the competition and help the organizers capture those in the rules,” said Grimson. “There are always ways in which we can improve, specifically for the Clean Energy Prize and for other student-run competitions.”

Students weigh in

Members of the community who have read the *Chronicle* article

have drawn analogies between the Sandia-CoolChip situation and regular term papers at MIT. Term papers are also considered “academic exercises,” and any plagiarism in that context would, according to the MIT academic integrity website, lead to “failing the assignment, failing the course, and/or being suspended from the Institute or expelled.” MIT students who knew of the situation by reading the *Chronicle* expressed some confusion. “From a moral standpoint, it’s unclear,” said Ravi M. Charan ’13. “We should allow the possibility that there was some misunderstanding on the part of CoolChip as to what was acceptable.” Some said that monetary rewards change the nature of what would ordinarily be just an “academic exercise.” “Sanchez’s team may or may not have realized that they were essentially poaching someone’s work, but the cash prize for the competition makes this much more than an ‘academic exercise,’” said Katie Allsop ’13. “It’s fairly mind-boggling to me that a high stakes, very visible competition could be viewed as only an ‘academic exercise,’” added Tejas A. Navaratna ’13. Still, some felt there was room for discussion. “I would like to hear CoolChip’s side of the story from CoolChip instead of just from the Technology Licensing Office (TLO), Sloan, and other MIT institutions before I’d be willing to indict them,” said Charan.

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What Was Learned From The Academic Life And The Darwinian World Of Biotechnology

MIT School of Science

Marc A. Kastner, *Dean*

colloquium

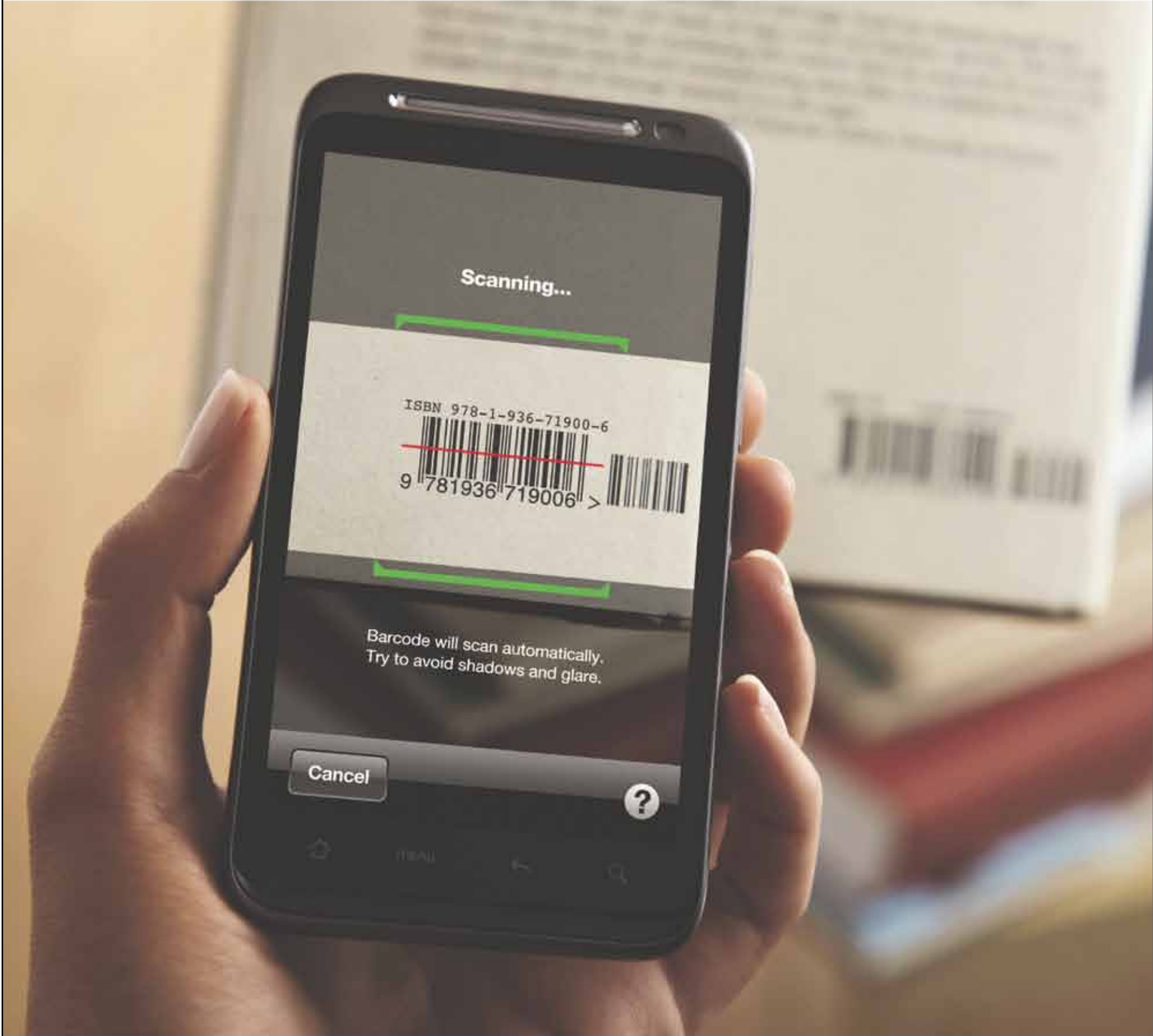


Paul Schimmel, Ph.D.
*Ernest and Jean Hahn Professor at
The Skaggs Institute for Chemical Biology
at The Scripps Research Institute*

Thursday, September 22, 2011
3:45 p.m. Community Reception
Pappalardo Room 4-349
4:15 p.m. Colloquium and Q&A
Introduction by Phillip A. Sharp, Ph.D.
MIT Institute Professor
1993 Nobel Laureate
Building 10-250

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STEVE HOWLAND—THE TECH
This Virginia Brickfair exhibit shows a radioactive spill with LEGOmen in HazMat suits attempting containment.



STEVE HOWLAND—THE TECH
The Brickfair exhibit this past August featured intricate LEGO structures. This model from the Virginia Brickfair, “Apocalypse Area,” depicts a building with foliage growing on the collapsed structure.



JESSICA L. WASS—THE TECH
This summer the Prudential Building lit its windows in support of the Boston Bruins prior to their Stanley Cup win in June. This was a historic victory, as it was the first time the Bruins took the Cup since 1972.

SUMMER!

Some *Tech* photographers toured Europe, some stayed home. Everybody came back to campus with beautiful, interesting, or downright nerdy photos.



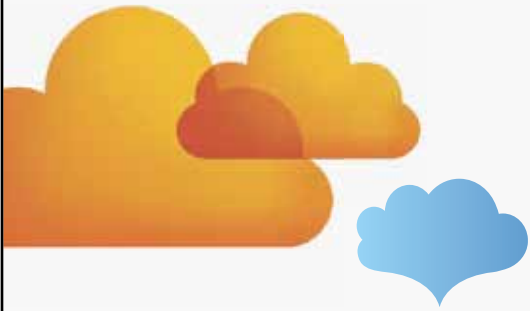
MENG HENG TOUCH—THE TECH
A model of the LHC superconducting magnet displayed at the CERN Meyrin site in Geneva, Switzerland. CERN is the European Organization of Nuclear Research where the Large Hadron Collider, the world’s largest particle accelerator, is located.



JENNIFER WANG—THE TECH
St. Peter’s Basilica in Vatican City grants visitors a grand view as they enter. The Basilica is the largest Christian church in the world and is regarded as one of Catholicism’s holiest sites.



JENNIFER WANG—THE TECH
Männlichen, Switzerland, affords tourists breathtaking mountain views. Here, you can clearly see lush green areas in lower elevations and crisp snow at much higher elevations, even in the summer months.



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Baltimore institute sued for lead dust & kids study

By Timothy Williams
THE NEW YORK TIMES

A class-action lawsuit was filed Thursday against a prominent Baltimore medical institute, accusing it of knowingly exposing black children as young as a year old to lead poisoning in the 1990s as part of a study exploring the hazards of lead paint.

Lawyers for the plaintiffs say that more than 100 children were endangered by high levels of lead dust in their homes despite assurances from the Kennedy Krieger Institute that the houses were “lead safe.”

The institute, a research and patient care facility for children that is affiliated with Johns Hopkins University, periodically tested the children’s blood to determine lead levels.

But, the lawsuit said, Kennedy Krieger provided no medical treatment to the children, who ranged in age from 12 months to 5 years old. Lead exposure was a significant

cause of permanent neurological injuries in some of the children, according to the suit. Johns Hopkins, which approved the study, is not a defendant in the lawsuit.

“Children were enticed into living in lead-tainted housing and subjected to a research program which intentionally exposed them to lead poisoning in order for the extent of the contamination of these children’s blood to be used by scientific researchers to assess the success of lead paint or lead dust abatement measures,” said the suit, filed in state court in Baltimore. “Nothing about the research was designed to treat the subject children for lead poisoning.”

Dr. Gary W. Goldstein, president and chief executive of the Kennedy Krieger Institute, said in a statement Thursday that the research was conducted in the best interest of all of the children enrolled.

“Baltimore city had the highest lead poisoning rates in the country, and more children were admitted to our hospital for lead poisoning

than for any other condition,” he said. With no state or federal laws to regulate housing and protect the children of Baltimore, a practical way to clean up lead needed to be found so that homes, communities, and children could be safeguarded.

“Overall, the blood lead levels of most children residing in the study homes stayed constant or went down,” the statement read, “even though in a few cases, they rose.”

The lead paint study, which started in 1993 and continued for six years, was designed to determine how well various levels of lead abatement would reduce lead in the blood of young children. The buildings where the study was carried out were generally in poor neighborhoods of Baltimore. Litigation surrounding the research has gone on for more than a decade, and in 2001 the Maryland Court of Appeals compared the study to the Tuskegee syphilis experiment, which withheld medical treatment for black men with

syphilis.

According to the lawsuit, Kennedy Krieger helped landlords get public financing for lead abatements and helped select families with young children to rent apartments where lead dust problems had been only partly eliminated so that the children’s blood could be measured for lead over a two-year period, according to the lawsuit.

“What they would do was to improve the lead hazard from what it was but not improve it to code,” said Thomas F. Yost Jr., one of the lawyers who filed the suit.

Yost said that although parents signed consent forms, the contracts failed to provide “a complete and clear explanation” about the research, which aimed to measure “the extent to which the children’s blood was being contaminated.”

David Armstrong, the father of the lead plaintiff in the lawsuit, David Armstrong Jr., said that after his son, age 3, was tested for high levels of lead in 1993, he went to a Kennedy Krieger clinic for help.

The father said the family was provided state-subsidized housing by Kennedy Krieger and was told they would be part of a two-year research project. Armstrong said he was not told that his son was being introduced to elevated levels of lead paint dust.

Armstrong said blood was collected from his son for two years, but that no one told him the lead levels had increased. After the two-year mark passed, Armstrong said he continued to live in the two-bedroom apartment but did not hear from Kennedy Krieger.

During those two years, he said his son, now 20 years old, received no medical treatment for lead. Later, when Armstrong took his son to a pediatrician, the doctor detected blood lead levels 2 1/2 to three times higher than they had been before the family moved into the apartment.

“I thought they had cleaned everything and it would be a safe place,” Armstrong said. “They said it was lead safe.”

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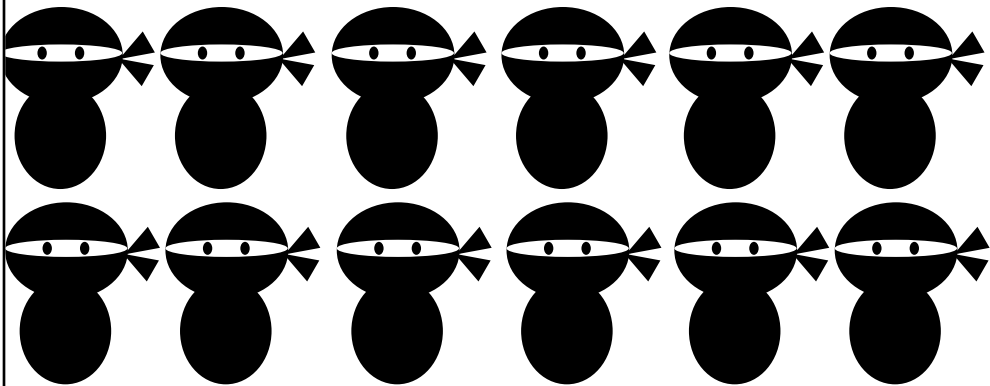


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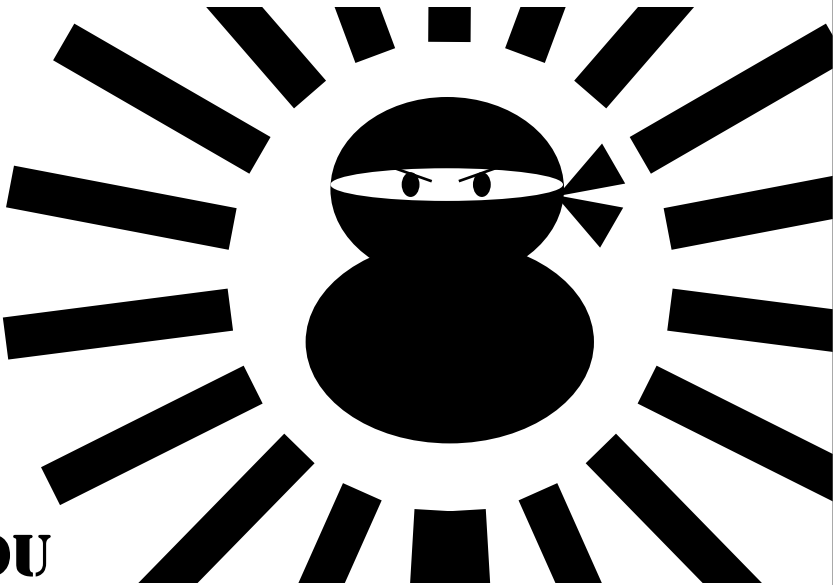
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The Tech's

Production Department Word of the Day:

Babel, n.

A confused or discordant medley of sounds,
esp. of voices; a hubbub, a din.

Famine hits hard in a world now less likely to intervene

By Jeffrey Gettleman
THE NEW YORK TIMES

DOLO, Somalia — Is the world about to watch 750,000 Somalis starve to death? U.N. warnings could not be clearer. A drought-induced famine is steadily creeping across Somalia and tens of thousands of people have already died. The Islamist militant group al-Shabab is blocking most aid agencies from accessing the areas it controls, and in the next few months, three-quarters of a million people could run out of food, U.N. officials say.

Soon, the rains will start pounding down, but before any crops will grow, disease will bloom. Malaria, cholera, typhoid and measles will sweep through immune-suppressed populations, aid agencies say, killing countless malnourished people.

In a way, this is *deja vu*. In the early 1990s, Somalia was hit by famine, precipitated by drought and similarly callous thugs blocking food aid and producing similarly appalling images of skeletal children dying in the sand. In fact, the famine back then was in the same area of Somalia, the lower third, home to powerless minority clans that often bear the brunt of this country's chronic troubles.

But in the 1990s, the world was more willing to intervene. The United Nations rallied behind more than 25,000 U.S. troops, who embarked on a multibillion-dollar mission to beat back the gunmen long enough to get food into the mouths of starving people.

Contrast that with what happened last week. At a lackluster famine summit meeting in Nairobi, Kenya, Ethiopia's prime minister, Meles Zenawi, proposed to forcefully establish humanitarian corridors, so that food aid could be delivered to al-Shabab-controlled areas. Few Western donors were enthused.

"There's no mood for intervention," said one American official, who was not authorized to speak publicly on the matter. "People remember what happened in the 1990s. 'It doesn't work' was the

conclusion."

Foreign military force, analysts say, has never succeeded in solving Somalia's problems and it is not going to solve them now. This famine is not just about the al-Shabab's blocking food aid. It is about a broken state and the human wreckage it is causing.

Take Mogadishu, the capital. Al-Shabab more or less pulled out in August, leaving Somalia's transitional government in control of large swathes of the city, including the sprawling camp for displaced refugees. But government "control" — and that term seems more aspirational than meaningful — does not translate into a smooth aid operation. Instead, government soldiers have looted aid trucks and shot starving people.

Somalia's politicians have been too busy squabbling with one another to build institutions like a functioning health ministry or a sanitation department that would help drought victims. Some of the informal clusters of people camped out for aid are breaking up, and it is not clear where the displaced people are trudging to. Many aid agencies — and Western militaries — are justifiably wary of this environment, and so far the response to the famine has been well short of what is needed to stem the crisis.

"I don't think that there's a case to be made that the famine can be mitigated through military intervention," said Bronwyn E. Bruton, a democracy and governance expert who wrote a provocative essay published by the Council on Foreign Relations urging the West to withdraw from Somalia.

The African Union, which has 9,000 peacekeepers in Mogadishu, "isn't able to safeguard the delivery of aid in Mogadishu," Bruton said. "How could they possibly extend their reach outside the capital?"

"Theft, corruption and violence are endemic," she added. "The problem extends past al-Shabab to anybody with a gun."

In Somalia, there are many of them. This was the problem in the 1990s. The United Nations urged U.S. forces to disarm the warlords

and their flip-flop-clad militias, but the Pentagon did not want to risk many American lives to do that. Instead, the United States opted for a narrowly scoped intervention and then hastily withdrew after 18 servicemen were killed in an epic street battle immortalized in the "Black Hawk Down" book and movie (and video game). According to a study by the Refugee Policy Group, the U.S.-led operation and the attendant relief effort saved around 110,000 lives, while 240,000 were lost to the famine.

It is grim math, especially considering how enormous the aid operation was. The Refugee Policy Group study has a graph showing famine casualties, which tend to come in two spikes: one at the onset of the crisis, before the bulk of aid arrives; the other when the rains come. For the current famine, analysts are now bracing for possibly hundreds of thousands of deaths.

"We've lost this round," said Ken Menkhaus, a political science professor at Davidson College in North Carolina. "The numbers are going to be horrifying. We're too late."

Famines do not turn on a dime. Bodies are depleted by months of malnutrition and stress. Many Somalis, as evidenced by the throngs of half-living people stumbling into the camps in Mogadishu or the ones here in Dolo, a little town on the Ethiopian border, are too far gone.

"One or two people are surviving from each family," said Lul Mahamoud Ali, a mother of four who recently arrived from a famine-stricken village. Her children were listless and glassy-eyed, and Lul carried with her all she owned — a thin mattress, a red mat and a wooden chest, which was empty.

Menkhaus worked as an aid consultant in Somalia in the 1990s and said: "Back then, we were just making it up as we went along. Today it's so much more scientific."

For instance, the U.S. government has helped set up the Famine Early Warning Systems Network, which tracks everything from rainfall to the price of goats to forecast potential famines worldwide. This has helped aid groups pre-position food in Somalia and prepare for the deluge of refugees, though it seems that few anticipated just how bad this famine would be.

Another lesson learned was how to feed people. The approach in the 1990s was to flood Somalia with food aid, which empowered militias, set off conflict between them and created a flourishing criminal network of war profiteers who stood to make millions off looted grain. This time around, the World Food Program and others are still handing out food, but more aid agencies are turning to cash or to food vouchers, enabling hungry people to buy their own supplies, which is intended to encourage private enterprise and not make enemies of Somalia's powerful businessmen.

The other day, Chris Smoot, an official with the World Vision aid group, arrived in Dolo with a thick book of food vouchers. He presented them to the young district commissioner, who sat in a twig hut and revealed that he had little experience in dealing with emergencies and little schooling.

"Imagine," Smoot said. "You're 35 years old, you have a primary school education, you're the DC, and now you're confronted with this?"

Twenty years after the central government collapsed, this is the story across so much of Somalia. And given the world's limited interest in a major intervention, that is not likely to change anytime soon.

ENERGY STUDIES

MINOR at MIT

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Drop-In Information Sessions

Tuesday, September 20th

****Food will be served****

Sessions at: 1pm AND 2pm

Student Center Coffee House
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Seniors: Energy Studies Minor application deadline is October 7th

web.mit.edu/energystudies





MIT Korean Cultural Celebration

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Monday, September 19, 2011
11:30 am - 2:30 pm
Kresge BBQ Pit

12:10pm, 1:10pm

12:30pm, 1:30pm

FREE Korean Food
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So then, Papa Bear said "I'm turning off the Internet except for one hour a day."

An hour a day? What?

I thought these books were supposed to be for kids!

This is **terrifying**. You got this at school?

I never understood why you would burn a book.

Now I get it.

Son, what Papa Bear is doing is child abuse. Brother and Sister Bear need to call the... Bear Police.

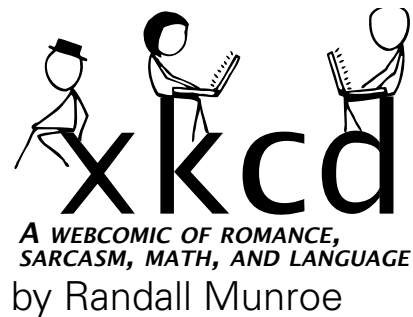
1	2	7	5	4		3		
8		9		3				6
4	1	5					7	
		2				6		
	6					5	8	1
2				9		4		3
		1		6	5	8	2	9

48x		450x			
	6x		12x		20x
1		11+		6	
60x			9+		
	6x		2x	24x	
5		6			3

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



S M B C
SATURDAY MORNING BREAKFAST CEREAL
BY ZACH WEINER
[2367]



[949] File Transfer

YOU WANT YOUR COUSIN TO SEND YOU A FILE? EASY.
HE CAN EMAIL IT TO— ... OH, IT'S 25 MB? HMM...

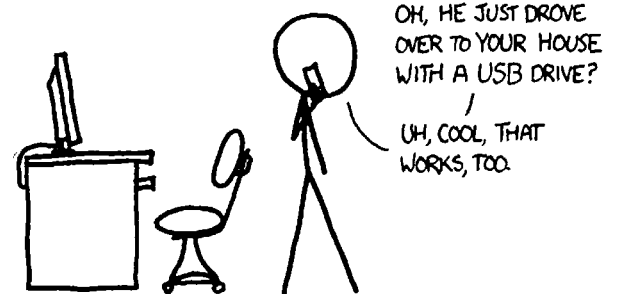
DO EITHER OF YOU HAVE AN FTP SERVER? NO, RIGHT.

IF YOU HAD WEB HOSTING, YOU COULD UPLOAD IT...

HMM. WE COULD TRY ONE OF THOSE MEGA SHARE UPLOAD SITES,
BUT THEY'RE FLAKY AND FULL OF DELAYS AND PORN POPUPS.

HOW ABOUT AIM DIRECT CONNECT? ANYONE STILL USE THAT?

OH, WAIT, DROPBOX! IT'S THIS RECENT STARTUP FROM A FEW
YEARS BACK THAT SYNC'S FOLDERS BETWEEN COMPUTERS.
YOU JUST NEED TO MAKE AN ACCOUNT, INSTALL THE—



I LIKE HOW WE'VE HAD THE INTERNET FOR DECADES,
YET "SENDING FILES" IS SOMETHING EARLY
ADOPTERS ARE STILL FIGURING OUT HOW TO DO.

Every time you email a file to yourself so you can pull it up on your friend's laptop, Tim Berners-Lee sheds a single tear.

Crossword Puzzle

Solution, page 22

ACROSS

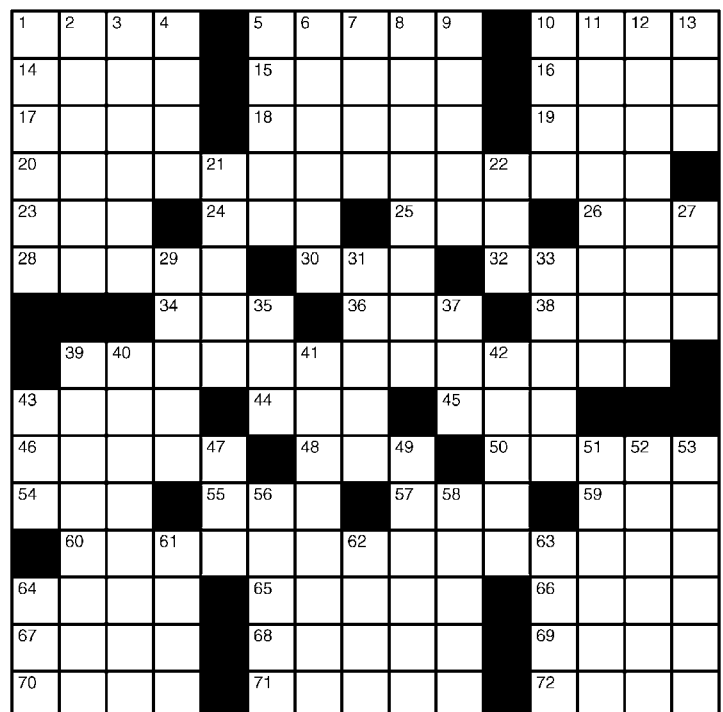
- 1 Get on the phone
5 Run after
10 Swing to and fro
14 Follow orders
15 Half-pints
16 Increase staff
17 Dietary fiber source
18 Moffo and Pavlova
19 Doctrines
20 In need of a boost
23 Suited for
24 Word with whiz
25 Genetic stuff
26 Flock member
28 Seat at the bar
30 Pi follower
32 Atomic number 5
34 Took the cake
36 Frequently, to a bard
38 Encircle
39 Energy depleted
43 Utter joy
44 Draw
45 "Annabel Lee" poet
46 Small salamanders

- 48 Grain in a Salinger title
50 Meat stock jelly
54 Advanced deg.
55 Keats composition
57 Scale notes
59 Lennon's love
60 Exhausted
64 Regretful soul
65 Poultry housing
66 Account entry
67 Latin I verb
68 Be entertaining
69 Soybean paste
70 Slob's creation
71 Elaborate parties
72 Plays a part

DOWN

- Down
- 1 Hooded vipers
 - 2 Exceedingly sudden
 - 3 Primitive shelter
 - 4 Loretta of country music
 - 5 Stretch out one's neck
 - 6 Kind of strike
 - 7 A.D. word
 - 8 Stalemate

- 9 City on the Ruhr
10 Ark or bark
11 Showy ornamental
vine
12 Destructive moth larva
13 Willing word
21 Arctic shelter
22 Queen of the fairies
27 Wind up
29 Little screecher
31 Hogwash!
33 Curvy moldings
35 Crackpot
37 Recipe meas.
39 Tavern
40 Indecency
41 Humdrum
42 Drinker's salute
43 Economic stat.
47 Dad's little man
49 Slip away
51 Lyrical
52 Consume
53 Universe
56 Coffeehouse order
58 Nincompoops



- 61 Fodder for the smelter 63 Succotash morsel
62 Churlish individual 64 Sleep state, for short

NASA detects planet dancing with pair of stars

By Dennis Overbye
THE NEW YORK TIMES

From double sunrise to double sunset the show goes on, always changing.

Sometimes the orange sun rises first. Sometimes it is the red one, although they are never far apart in the sky and you can see them moving around each other, casting double shadows across the firmament and periodically crossing right in front of each other.

Such is life, if it were possible, on the latest addition to the pantheon of weird planets now known to exist outside the bounds of our own solar system. It is the first planet, astronomers say, that has been definitely shown to be orbiting two stars at once, circling the pair — which themselves orbit each other tightly — at a distance of some 65 million miles.

A team of astronomers using NASA's Kepler planet-hunting spacecraft announced the discovery Thursday in a paper published online in the journal *Science*, in a

talk at a conference in Jackson Hole, Wyo., and in a news conference at NASA's Ames Research Laboratory in Mountain View, Calif., Kepler's headquarters.

The official name of the new planet is Kepler 16b, but astronomers are already referring to it informally as Tatooine, after the home planet of Luke and Anakin Skywalker, in the George Lucas "Star Wars" movies, which also had two suns.

"Reality has finally caught up with science fiction," said Alan P. Boss of the Carnegie Institution, a member of the research team.

Indeed, John Knoll, a visual effects supervisor at Industrial Light & Magic, which is part of Lucasfilm, and who worked on several of the "Star Wars" movies, joined the Ames news conference and showed a clip from the original movie.

"Again and again we see that the science is stranger and weirder than fiction," Knoll said. "The very existence of this discovery gives us cause to dream bigger."

While some double-star systems, of which there are billions in the gal-

axy, have been suspected to harbor planets, those smaller bodies have never been seen.

"This is a direct detection; it removes all doubt," said Dr. Laurance Doyle of the SETI Institute in Mountain View, who led the discovery team. "It will help those guys make their case."

Beyond the wow factor, astronomers said the discovery — as so many discoveries of so-called exoplanets have done — had thrown a wrench into another well-received theory of how planets can and cannot form.

"In other words," said Sara Seager, a planetary expert at the Massachusetts Institute of Technology who was not part of the discovery team, "people don't really know how to form this planet."

It was long thought, Seager said, that for its orbit to be stable, a planet belonging to two stars at once would have to be at least seven times as far from the stars as the stars were from each other. According to that, Kepler 16b would have to be twice as far out as it is to survive.

"This planet broke the rule," she said.

Moreover, by timing all the eclipses and transits of the planet and stars in the system, the astronomers have been able to measure the sizes and masses of the stars and the planet to unusually high precision, calibrating models of stellar and planetary properties.

"I believe this is the best-measured planet outside the solar system," Doyle said.

Technically, Tatooine is probably a ball of rock and gas about the size and density of Saturn living in a system about 200 light-years away, in the constellation Cygnus.

If you go, pack to wear layers. Because those suns move back and forth all the time, temperatures on the planet can change by some 54 degrees over the course of a few Earth days from minus 100 to minus 150 Fahrenheit. So the weather is like "a nippy day in Antarctica at best," as Doyle put it.

Kepler, launched in 2009, is on a three-year mission to determine the fraction of stars in the galaxy that have Earth-like planets. It scrutinizes a patch of some 155,000 stars in the constellations Cygnus and Lyra looking for dips in starlight when planets cross in front of their home stars.

In the case of the Kepler 16 system — home to Tatooine — there

turned out to be a lot of dips. The two stars are about 20 million miles apart and produce two eclipses every 41 days as they take turns going in front of each other. One star is about two-thirds the mass of the sun, the other about one-fifth of the sun.

In addition, there are smaller dips when the planet, which is about 65 million miles from the center of the system — about the distance of Venus from the sun — passes in front of each of the stars in the course of its 229-day orbit.

The degree of dimming during the planetary transits — those times that a planet crosses the path of something else — usually allow Kepler astronomers to measure the size of a planet relative to the stars. As a result, uncertainties in the properties of stars propagate into uncertainties of as much as 25 percent in the mass of a planet — enough to blur the line between a rocky planet and a gaseous one.

But in the Kepler 16 system, by comparing slight variations in the timing of the transits with calculations of the positions of the stars and the gravitational nudges the bodies give one another, Doyle's team could deduce the absolute masses and sizes of the stars and planets in the system. That is a tool, they say, that is becoming increasingly valuable

Kepler-16b, Page 21

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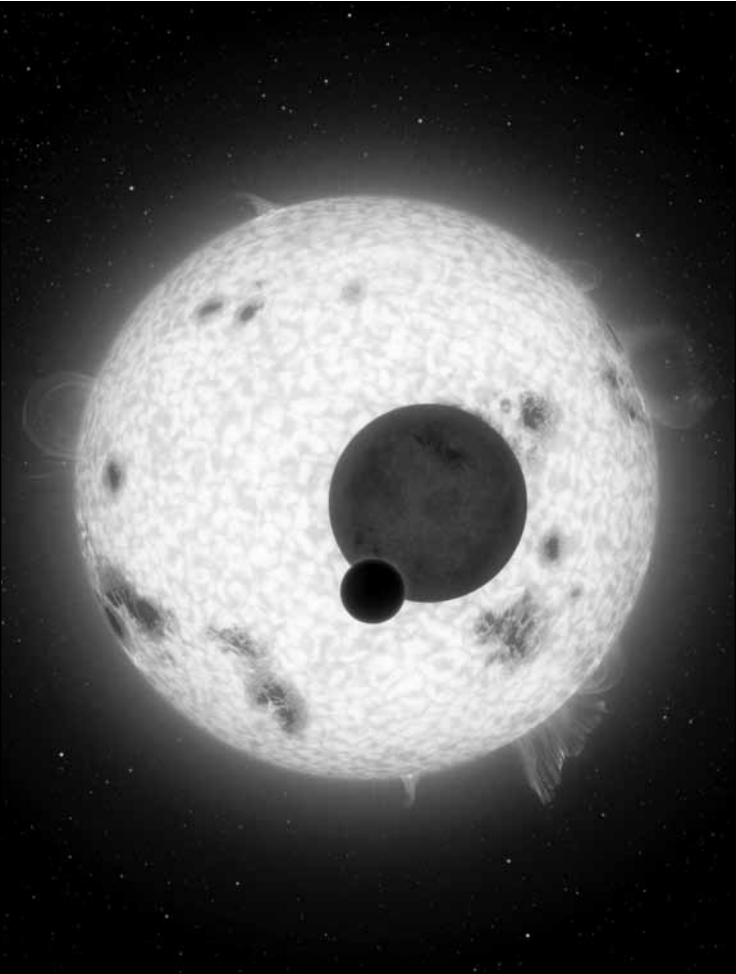
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NASA/JPL-CALTECH/R. HURT

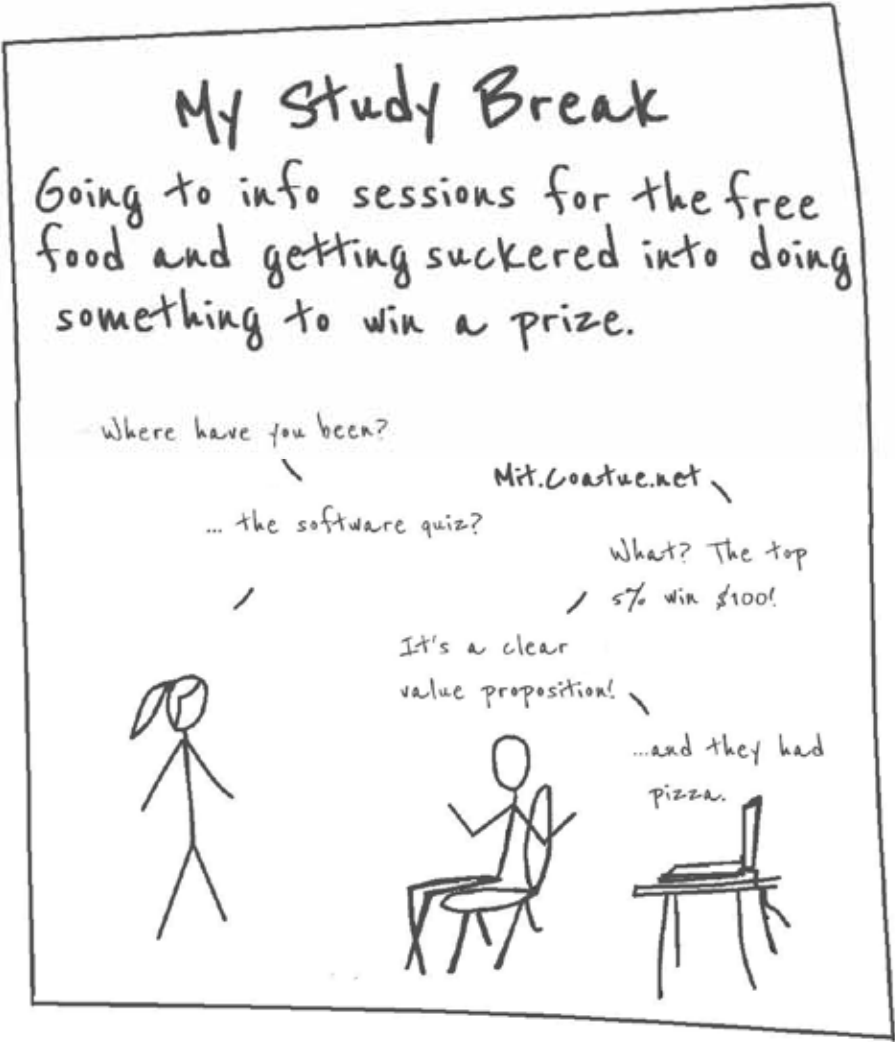
Where the Sun Sets Twice. NASA's Kepler mission has discovered a world where two suns set over the horizon instead of just one. The planet, called Kepler-16b, is the most "Tatooine-like" planet yet found in our galaxy and is depicted here in this artist's concept with its two stars. Tatooine is the name of Luke Skywalker's home world in the science fiction movie Star Wars. In this case, the planet is not thought to be habitable. It is a cold world, with a gaseous surface, but like Tatooine, it circles two stars.

Kepler-16b, from Page 20

for determining the masses of small planets in multiple-planet systems. As a result, said Doyle, "it's a laboratory for all sorts of physics and stellar evolution." The Tatooine laboratory will be available to a wide audience for at least a while longer. Doyle noted that amateur astronomers in northern Asia, equipped with as little as an eight-inch telescope and an off-the-shelf CCD detector (an elec-

tronic device that cameras use to capture images), would be able to record the passage of the Tatooine planet across the brighter star in its system on June 28 next year. But enjoy it while you can. Because of variations in the planet's orbital plane, as seen from Earth, the planet will stop crossing one of the stars as soon as 2014 and cease transiting the other, brighter one in 2018. It will be around 2042 before the show starts up again for Earthlings.

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Monday Sept 19, 1pm, Kiva (32-G449), *Dessert*
Tuesday Sept 20, 8pm, Rm 4-370, *Bertucci's*
Tuesday Oct 4, 7pm, Grier (34-401A), *Chinese*

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@ Briggs
Field

1st team KO @ 1p
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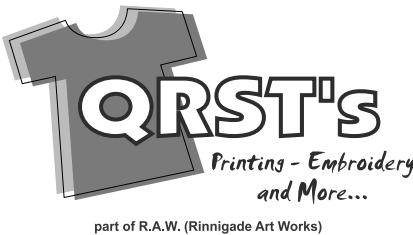
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Bid rate is usual

*Freshman says
recruitment has
ups and downs,
but good overall*

Recruitment, from Page 22

next day, the recruits receive a bid from one chapter through mutual selection.

A freshman's perspective

Lee Gross '15, a freshmen recruit said her favorite part of recruitment was seeing the houses. "It changes your perspective. You see a different side of the sorority."

She added, "It's good that [the recruitment process] makes you see all the sororities, see what each one is all about. But after seeing them for one time and talking to the different sisters, you don't have to see all of them all over again. You already have an idea of whom you want to talk to. I think that [it would be] better if they let you choose and let you choose how much time you want to spend with each one and give you more freedom. It was very, very structured."

Gross proposed other changes to the recruitment process. "They also don't really let you talk to [the sisters] outside of the sorority. Recruitment is very polished, ... and you don't really get to know what they're like. It [would be] nice ... to see what they're like in real life."

In the end, though, Gross felt good about her top choices. "I felt like I really got along with them, and we had a lot of things in common. I can see myself just hanging out with them."

Gross feels that she'll be joining a supportive community that will help her through her transition to life at MIT and be there for her for the next four years.

It seems that Gross decided to be in a sorority for all the right reasons.

Solution to Sudoku
from page 18

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

Solution to Techdoku
from page 18

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

Solution to Crossword
from page 19

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

Steelers struggle in season openers

NFL, from Page 24

completing 32 of his 49 pass attempts for 419 yards and three touchdowns without an interception. Even those numbers weren't enough to overcome the Green Bay Packers, the defending Super Bowl Champions. There was a bright spot for the division that lost, however. Cam Newton turned in the strongest performance ever for a rookie in his first game, going 24 for 37 with 422 yards, two touchdowns, and an interception. To put it in perspective, the most yards Tom Brady has ever thrown in a regular season game (before last week) was 410 yards.

One thing we did learn for certain, though, is that football is back for one of the most exciting seasons in years.

Unfortunately, Newton's effort wasn't enough to overcome the Kevin Kolb-led Arizona Cardinals. Kolb was able to prove himself as an elite quarterback, showing what Andy Reid saw in him last year when he traded Donovan McNabb to make Kolb the starter in Philadelphia.

3. A year ago, the Pittsburgh Steelers were one drive away from winning their third Super Bowl under Mike Tomlin. In their first regular season game since that loss, they looked like a completely different team. Their normally shutdown defense, which allowed an average of only 80 yards rushing last year, allowed 180 rushing yards. The normally stellar offense committed 7 turnovers and, in a season that has already lost on AFC superpower, we might be looking at a disappointing season for another superpower.

4. Early injuries might have turned some hopeful seasons into another season of disappointment. The team hardest hit was the St. Louis Rams. After being one win away from winning the NFC West and going to the playoffs in Sam Bradford's first year in the NFL, the Rams saw Bradford leave early with nerve damage in his index finger. They also saw running back Steven Jackson leave with a thigh injury. Leading receiver Danny Amendola is likely out for the season with a dislocated elbow. Right tack Jason Smith suffered a high ankle sprain, and top cornerback Ron Bartell left with a shoulder injury. Other serious injuries included Chargers kicker Nate Kaeding (torn ACL), Saints wide receiver Marques Colston (broken collarbone), Texans receiver Kevin Walter (broken shoulder), and the Bengals' rookie quarterback Andy Dalton, who sat out for the second half of Sunday's game with a wrist injury.

5. After disappointing seasons last year, the San Diego Chargers and the Washington Redskins had a lot to prove in their first games of the season. In the past few years the San Diego Chargers have suffered incredibly slow starts despite having the top-ranked offense and defense. Last year, poor special teams play cost the Chargers an opportunity to return to the postseason. The early signs aren't good, especially when Percy Harvin returned a kickoff for a touchdown. Phillip Rivers was in typical form, going 33 for 48 with 335 yards and bringing the Chargers back from a 17-7 halftime deficit to beat the Minnesota Vi-

kings 24-17. Three of the Chargers' first four games are at home; if they can go 3-1 they are likely to return to the top of their division and have a serious shot at a Super Bowl run.

Mike Shanahan and the Redskins' front office had a lot to prove in their opener after releasing Donovan McNabb for a relatively unknown Rex Grossman in the offseason. Mike Shanahan has a habit of taking good teams and making them great, but after a six-win season last year many doubted his ability to make the Redskins a serious contender in a tough NFC East. They were able to take advantage of a depleted New York Giants and walk away with an easy 28-14 victory. So far, it seems that the Redskins made a smart decision going with Rex Grossman as their quarterback.

Of course, the NFL season is long and the first week isn't always a good predictor of things to come in the next 15 games. One thing we did learn for certain, though, is that football is back for one of the most exciting seasons in years.

Sailing starts season strong

Engineers capture 3rd, 4th, 5th and 9th places

By Mindy Brauer
DAPER STAFF

The MIT sailing team kicked off its season by competing in three events this past weekend.

The Engineers captured fifth place out of 20 teams at the Harry Anderson Trophy, finished ninth at the Toni Deutsch Trophy, and took third and fourth at the Harvard Invitational.

Skipper Eamon M. Glackin '12 and crew Kelden M. Pehr '13 placed second in the opening round of the Harry Anderson Trophy and went on to record three more top five finishes en route to a sixth place performance in the A Division. Andrew Z. Sommer '13 collaborated with Stephanie Tong '12 and Steven G. Drapcho '13 to rank eighth in the B Division while posting five top 10 performances. Sommer, the skipper for all 10 rounds, earned the top spot in the ninth rotation with Drapcho and was third in the second heat with

Tong. Wisconsin earned top honors in the event with 138 points, followed by Harvard (147), host Yale (148), Boston College (164), and MIT (173).

Competing in its lone home event, captain Jacqueline M. Soegaard '12 guided a young women's squad to ninth place at the Toni Deutsch Trophy. In the A Division, sophomores Hanna M. Vincent '13 and Grace Anne C. Young '13 ranked sixth behind the strength of 10 top five performances. The duo was first in the 16th round and captured fourth on four occasions. Freshman skipper Chloe Lepert '15 teamed with Soegaard in the first 18 rounds of B Division action while Laura J. Dunphy '15 and Iris Xu '14 closed out the race for the Engineers, who ranked eighth. The quartet finished in the top 10 in 19 of 26 rounds and had seven placements in the top five.

Brown edged out Boston College by three points to win the event while Yale, Roger Williams University, and Dartmouth rounded out the top five. The tro-

phy is named after Toni Deutsch '58, a distinguished alumna who was a member of the sailing team that won several national championships and was the first woman to receive a varsity letter at MIT.

In the one day, four-team Harvard Invitational, MIT entered two squads, the Engineers and the Beavers, which placed third and fourth, respectively. Tufts University won the competition with 47 points while the host Crimson came in second.

The Engineers' A Division boat, comprised of senior Tevis Nichols '12 and classmate Neil T. Forrester '12, placed third with 42 points while Santiago Cuellar '12 and David Rodriguez Fuentes '13 accumulated 48 points to finish fourth in the B Division.

Javier E. Ramos '12 and Nicholas W. Paggi '15 totaled 60 points in their fourth place A Division outing. Taylor S. Burfield '13 and Patricia E. Saylor '14 wrapped up the race with 40 points and a third place finish in the B Division. Tech next competes in the Hatch Brown this weekend.

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Get to know your new home team

SPORTS STAFF

When I came to New England, I didn't become a Patriots fan. Sure, I might have done so over the years, just as I converted to the Red Sox in 2003, leaving behind the St. Louis Cardinals. However, when St. Louis Rams' third-string quarterback Kurt Warner soared to stardom with Marshall Faulk, Isaac Bruce, and Torry Holt, on a team that had seemed hopeless going into the 1999 season, I fell for the team of my early childhood. When the Rams prepared to play the Pats in February 2002, I was merciless in my trash-talking of the Patriots around my friends (all Patriots fans). When the Patriots won that Super Bowl on a last-second field goal by Adam Vinatieri, I was deeply scarred by the loss.

Objectively, I like the Patriots. They are team-first, unselfish, and no-nonsense — much like the post-2004 (or more completely, post-Manny Ramirez) Red Sox. Everything that is wrong with pro sports, they are not. However, I do not, by any means, consider myself a Pats fan. I was in the Indianapolis Colts' corner during the 2003 AFC Championship game at a snowy Gillette Stadium. I delighted in David Tyree's unforgettable grab that ruined the Patriots' perfect season in the 2008 Super Bowl. When the Ravens shocked the Patriots in last year's

Understandably, there were a few bumps along the road associated with the lockout — including a shorter amount of time for rookies to get together with their teams to learn routes, coverages, and bond with teammates. Football also felt the effect of the new kickoff rule: kickoffs



I can jump on the Bruins and Celtics bandwagons, am hopelessly devoted to the Red Sox, and would even hope that the Revolution might someday beat the Houston Dynamo and capture the MLS cup if you cared to ask. I can tell you a bit about the Patriots; just don't expect me to root for them.

The Patriots have been remarkably successful over the past ten years, a run that began with the hiring of coach Bill Belichick in 2000 from the New York Jets. Belichick is revered throughout New England for his approach to the game and his emphasis on the team ahead of the individual (for example, he would never cater to Brett Favre's every whim and desire). He engineered three championship runs (2001, 2004, 2005) with former Michigan Wolverines' quarterback Tom Brady. The Patriots appeared destined for still greater success during the 2007 season, winning all sixteen regular season games and two playoff games before losing to the New York Giants in the Super Bowl. Last year, the Pats secured the top seed in the AFC with a 14-2 regular-season record, but lost in their first playoff game against Jets.

This season, the Pats still face tough divisional competition. Chad Henne and the Miami Dolphins, despite being over-matched in their season opener against the Patriots, showed potential. The Jets are enthusiastic and talented; they made it to the AFC Championship game with quarterback Mark Sanchez each of the past two years. The bright spot for the Patriots is the passing offense; the receiving corps appears solid, as Wes Welker, Deion Branch, and new addition Chad Ochocinco provide superstar quarterback Tom Brady with plenty of options. The Patriots also haven't bothered to acquire a marquis running back since Corey Dillon retired, a weakness on which some teams are sure to capitalize; running backs Danny Woodhead and BenJarvus Green-Ellis will play a secondary role to Brady and his receivers. Defense remains a problem for the team, and the Pats will rely on their offense scoring enough points to cover up for any weaknesses.

You might tunnel through a wall before you find Patriots tickets at reasonable prices while the Pats are winning (tickets start at \$65 face value, but usually sold out), but they can be seen in high definition on CBS every weekend, including their second game of the season this Sunday, when they play the San Diego Chargers at 4:15 p.m.

Even with the expectation that players this opening weekend would be far from mid-season form, there were still a number of surprises and disappointments. The normally dominant Steelers were embarrassed in a 35-7 loss to the Ravens, turning over the ball seven times, even

Here are five lessons football fans have learned from Week One:

1. The AFC South no longer belongs to the Indianapolis Colts. With Peyton Manning out for the next two to three months because of more neck surgery,

this was our chance to see how out-of-retirement Kerry Collins could carry the Colts. The Colts might have been limp on offense without Manning, but their weak defense will get them nowhere in the division. They played so poorly that they have already started scouting Andrew Luck as a potential first-round draft pick to fill the quarterback position. The fall of the Colts, however, is likely to be the Houston Texans' chance to finally reach the playoffs. Matt Schaub is the most experienced quarterback in the AFC South, despite having the starting role for the Texans only since 2007. In the offseason, the Jaguars released their veteran quarterback David Garrard, and the Titans decided to bring in Matt Hasselbeck to try sparking their offense after releas-

In the season opener, Drew Brees had a great statistical game

A female field hockey player is shown in a dynamic pose on a green field. She is wearing a white jersey with the number 10, black shorts, and white socks. She is holding a field hockey stick and is about to strike the ball. The background is a blurred green field.

Erin B. Kenney '14 catches the ball in the women's field hockey game this Wednesday. MIT won 4 to 1 against Gordon College after Molly K. Duffy '14 scored twice in the first five minutes. The Engineers dominated the game, rarely letting the opposing team get close to the net, losing only one point in the last ten minutes.

9:30 a.m., Charles River

Five lessons football fans learned from Week 1

NFL season kicks off, full of surprising outcomes, injuries and football superpowers

Understandably, there were a few bumps along the road associated with the lockout — including a shorter amount of time for rookies to get together with their teams to learn routes, coverages, and bond with teammates. Football also felt the effect of the new kickoff rule: kickoffs



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