MIT's Oldest and Largest Newspaper



WEATHER, p. 2
FRI: 50° F | 32° F
Partly cloudy
SAT: 50° F | 32° F
Sunny
SUN: 56° F | 40° F
Sunny

Volume 131, Number 50 tech.mit.edu Friday, November 4, 2011

Nanotech lab top priority for MIT

Search for perfect location to build nMaSS lab continues

By Janelle Mansfield

STAFF REPORTER

Last April, President Susan J. Hockfield called the construction of the nano-Materials, Structures, and Systems (nMaSS) laboratory the Institute's "highest academic priority" in a video outlining the MIT 2030 plan for campus development.

The nMaSS lab will bring together research activities and equipment that are currently in different locations around campus. It will gather existing nanoscale research — specifically projects requiring sensitive equipment — and allow for fu-

ture expansion.

Nanoscale research is diverse, and happens in several of MIT's academic departments. Some groups are working on integrated circuits, for instance, while others develop nanomaterials for electrochemical energy storage and conversion.

Associate Provost Martin A. Schmidt PhD '88 says that MIT has needed a new nano-research facility for a while. He attributes this need to the physical condition of many current lab spaces and changes in the type of equipment used in this research.

Nanolab, Page 10



Lawrence H. Summers '75 (right) spoke Wednesday evening in Building E51 in a lecture sponsored by the Undergraduate Economics Association. In his talk, titled "Stimulating Growth in the Short and Long Run," Summers spoke about the lack of demand as the key factor in the U.S. economy's sluggishness. Summers, a former Harvard president, also talked about his experiences working for Presidents Clinton and Obama.

Empty UA Senate seats filled by new elections or presidential appointments

The UA Senate has seen several empty seats lately, and not because of students sleeping in. Several seats were never filled because nobody ran in UA elections or there was no clear winner. Other seats were vacated after senators resigned

No candidate won a plurality in the McCormick, New House, or fraternity elections, but those seats were filled in runoff elections.

It is the responsibility of each living group to fill its vacant seats after elections. Vacancies in Baker, Bexley, and ILG seats will be filled by senators appointed by those groups' presidents, said UA President Allan E. Miramonti '13. The seats vacated by resignations

in Simmons and MacGregor, in addition to a second seat in Next House, were filled in subsequent elections. New House still has only one senator, though it is allotted two spots.

"It's a matter of finding interest," said Miramonti. "It's better to have an empty seat than someone who doesn't want to be there." McCormick was allotted two senate positions last year, but population shifts have led to it only having one representative.

There were also problems with the election system itself. Hollie O'Brien '15, former Simmons senator, was nominated — jokingly, she said — as

UA Senate, Page 11

Megamimo wins Elevator Pitch Contest grand prize

By Austin J. Hess

The MIT \$100K Elevator Pitch Contest wrapped up Wednesday at the finale event in the Stata Center's Kirsch Auditorium. The Elevator Pitch Contest began with 285 contestants on Monday, and it is the first of a series of three contests sponsored annually by the MIT \$100K Entrepreneurship Competition.

To win the \$5,000 grand prize, individuals or team representatives had to deliver a 60-second pitch of a business idea to judges in one of six categories: emerging markets, energy, life sciences, mobile, products & services, and web/IT. Sixty semifinalists were chosen over the first two days of the contest, and 12 finalists were then chosen from this group. The two finalists in each category were announced at the finale event, when the judges chose a winner and two runners up for the contest.

The crowd at the Academy Awards-themed event, complete with inflatable noisemakers, overflowed the auditorium. The keynote address was given by Matt Lauzon, founder of online jewelry retailer Gemvara, which has secured more than \$25 million in venture capitalist funding. All four of the judges were also entrepreneurs in various industries.

Finalists were called up by category to re-deliver their pitches. They were sometimes cut off midsentence or mid-word by a loud buzzer at the end of a minute. The judges then had 30 seconds to ask questions of the contestants.

The finalists' business ideas represented a wide range of industries, from optimizing sun protection compounds to facilitating micro-philanthropy for

Elevator Pitch, Page 8



Hackers deployed a banner on Tuesday morning over Building 7 marking the end of the so-called "November rule." The November rule discourages upperclassmen from becoming involved with freshmen beyond friendship or introducing them to certain aspects of roof and tunnel hacking before Nov. 1.

IN SHORT

The ESP website won APO's Ugliest Manifestation contest, with \$155.77. Roberto J. Melendez '12 took second and Benjamin P. "Ducky Ben" Lehnert '13 took third.

The Stata wormhole dedication is Monday at 2:00 p.m. in the Forbes Café. Free ice cream!

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

2011-2012 IFC Executive Board elected

The 2011–2012 Interfraternity Council (IFC) Executive Board was elected on Tuesday by the Presidents' Council, with Thomas A. Anderson '13 elected as the

IFC's new president. Anderson, a brother of Zeta Psi, was previously IFC Judicial Committee secretary. The new executive board will assume their positions at the next Presidents'

Council meeting



Thomas A. Anderson '13, new IFC president.

on Wednesday, Nov. 16.

"My main concerns are interactions with the MIT community. I'd like to improve communications across the board," Anderson said.

One of the initiatives Anderson would like to work on is a general newsletter for the fraternity community that would include information about upPresident

Thomas A. Anderson '13 (Zeta Psi)

Vice President Louis DeScioli '15 (Delta Upsilon)

Executive Assistant
Alexander T. Kiefer '15 (Zeta Psi)

Risk Manager

Alexis J. Ludena '14 (Theta Delta Chi) Judicial Committee Chair

Kyle M. Smith '13 (Kappa Sigma)

Recruitment and Programming Chair Evan P. Wang '14 (Kappa Sigma)

Public Relations Chair

Douglas O. Sanchez '14 (Theta Delta Chi)

coming community service events, profiles of brothers, and a bulletin about risk management policies.

Anderson also wants to increase communication between fraternity houses through "delegate meetings" for specific officers, such as publicity

IFC Elections, Page 8

FROM THE DESK OF THE 1 PERCENT

Oh, sure, the 1 percent really do care about the

OPINION, p. 4

MIT DOES MACBETH

Shakespeare ensemble puts on quite a show. **ARTS**, **p. 7**

THE RENAISSANCE THAT WASN'T

Fukushima didn't kill the nuclear promise, it was already dead. **OPINION**, **p. 4**



THE TECH TALKS TO JORGE CHAM

Creator of the acclaimed PhD comics chats with us, on video!

VIDEO, p. 10

CITY COUNCIL ELECTIONS, PART II

Familiarize yourself with the rest of the candidates.

NEWS, p. 9

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Woman said she felt hostility after alleged Cain encounter ${\it WASHINGTON-One\ of\ the\ women\ who\ accused\ Republi-}$

can presidential candidate Herman Cain of sexual harassment while working for him at the National Restaurant Association in the late 1990s said that the workplace turned hostile after she complained about advances he made toward her, several people familiar with her account at the time said in interviews.

The advances were said to have taken place during a festive night in which Cain and several younger staff members imbibed until late in the evening, and his flirty banter with the woman crossed over into propositions that she leave with him, these people said, speaking in separate interviews and on the condition of anonymity.

Cain has repeatedly denied that he did anything inappropriate, although he has acknowledged that at least one severance payment was made to an accuser. His campaign did not respond to a request for comment on the new accounts of the incident Thursday evening.

—Jim Rutenberg and Jeff Zeleny, The New York Times

Petition drive challenges medical marijuana ban

BAKERSFIELD, Calif. — Kern County is not exactly the kind of place where you would expect a voter rebellion, what with its conservative rural residents, its live-off-the-land values and its almost unshakable devotion to the Republican Party.

But over the last several months, Kern County — about 100 miles north of Los Angeles in the Central Valley and as far as it can get from San Francisco — has become the scene of a civil war of sorts over an issue, medical marijuana, whose supporters are often of a more liberal stripe. At stake is a controversial new law — passed unanimously in August by the county's all-Republican Board of Supervisors — which would have effectively shut many of the three dozen or so medical marijuana dispensaries in the county.

But a funny thing happened on the way to the ban: A group of medical marijuana advocates started a petition drive to challenge it, calling for a referendum on the law, something that could happen as soon as next year. In the meantime, the law

-Jesse McKinley, The New York Times

Experts say bleak account of poverty missed the mark

WASHINGTON — When the Census Bureau said in September that the number of poor Americans had soared by 10 million to rates rarely seen in four decades, commentators called the report "shocking" and "bleak." Most poverty experts would add another description: "flawed."

Concocted on the fly a half-century ago, the official poverty measure ignores ever more of what is happening to the poor person's wallet - good and bad.

On Monday, that may start to change when the Census Bureau releases a long-promised alternate measure meant to do a better job of counting the resources the needy have and the bills they have to pay. Similar measures, quietly published in the past, suggest that safety-net programs have played a large role in restraining hardship: As much as half of the reported rise in poverty since 2006 disappears.

The fuller measures have also shown less poverty among children but more among older Americans; less among blacks but more among Asians; less in rural areas and more in cities and suburbs. And they have found fewer people in abject destitution, but a great many more crowding the hard-luck ranks of the near poor, who do not qualify for many benefit programs and lose income to taxes, child care, and medical costs.

–Jason Deparle, Robert Gebeloff and Sabrina Tavernise,

The New York Times

Palestinians' UN bid moves closer to rejection

By Neil MacFarquhar THE NEW YORK TIMES

The Palestinian bid for membership at the United Nations, which was doomed from the start by the threat of a U.S. veto, moved another notch closer to rejection on Thursday at the Security Council, diplomats said.

The council's membership committee met in private, with member states laying out their individual positions on the Palestinians' request, said diplomats, who spoke on the condition of anonymity under diplomatic protocol. The membership committee is trying to produce a report by Tuesday, and indications are that the group will be unable to reach a consensus.

The report is likely to be a dry, diplomatic document that says some committee members support the Palestinian's bid and others oppose it. A vote to forward the report to the General Assembly will probably take place on Nov. 11, diplomats said.

But a vote on the membership

request itself - which was intended by the Palestinians to represent international recognition of statehood - might even be skipped if none of the 15 Security Council members demands one.

It appears unlikely that the Palestinians will be able to muster the nine votes needed to approve the membership resolution, which would allow the U.S. to avoid having to exercise its veto.

Admission to the U.N. as a full member state requires a recommendation from the 15-member Security Council, with a majority of nine votes and no veto from the five permanent members, which include the U.S. A submission would then go to the General Assembly, where approval would require a two-thirds vote among the 193 members.

Some European nations that might have been expected to support the Palestinian bid have since said that they would abstain; these include France and Bosnia, diplomats said.

During the committee meeting on Thursday, France indicated that it intended to abstain, according to diplomats.

If the membership bid fails in the Security Council, the General Assembly is expected to take up the matter. Members of the General Assembly cannot veto an initiative, but the body would be able only to confer advanced observer status on the Palestinians, much like the standing now held by the

On Monday, UNESCO voted overwhelming to accept Palestine as the organization's 194th full member. In doing so, the organization — formally the U.N. Educational, Scientific and Cultural Organization - defied a mandated cutoff of U.S. funds under federal law, which will cost it one-quarter of its annual budget - the 22 percent contributed by the U.S. (about \$70 million) and the 3 percent contributed by Israel.

After their success at UNESCO, the Palestinians are now expected to try to join many other U.N. organizations, whatever the outcome of their bid for full membership through the Security Council.

FDA officials point to increased drug approvals

By Gardiner Harris

THE NEW YORK TIMES

Federal drug officials Thursday claimed credit for an increase in the approval of new drugs and argued that the results demonstrated the need for legislation to continue financing the current drug approv-

The Food and Drug Administration approved 35 new drugs in the year that ended in September, a number that was surpassed only once in the past decade.

The agency approved 24 of the drugs before they were approved in any other country. And many of them were important advances, including the first new drug for lupus in 50 years, the first new drug for Hodgkin lymphoma in 30 years, and the first drugs for late-stage melanoma that have been shown to prolong survival.

"I want to underscore that we

approved a set of drugs that are truly medically important, and in fact did so in a way that made these drugs available to Americans before other places around the world," Dr. Margaret Hamburg, commissioner of the FDA, said at a news conference.

The increase in drug approvals is good news for the pharmaceutical and biotechnology industries, which have failed to produce many new drugs in recent years. New drug approvals peaked in the mid-1990s and have generally declined since then despite increases in research spending. Major drugmakers have steadily cut their research spending since 2008 because of poor productivity, although increased spending by the biotechnology industry has generally made up for this shortfall.

For years, FDA officials said little about the declining number of new drug approvals. When some industry analysts blamed government rules for the slowdown, agency officials instead blamed a decline in high-quality industry applications and a general drought in industry labs.

Now that approvals are increasing, however, Hamburg is claiming some credit by saying that the agency has lowered some approval standards - particularly for cancer drugs - and speeded up many of its reviews.

Asked about this apparent contradiction, Hamburg responded, "I think the point we're trying to make is that when high quality science, good applications come before us, we are able to act swiftly and

Part of the reason for the agency's new message is that it wants to try to defuse growing calls in Congress - supported by biotechnology and medical device industry groups - to weaken its approval processes.

WEATHER

Sunny weather may wake you from extra hour of sleep

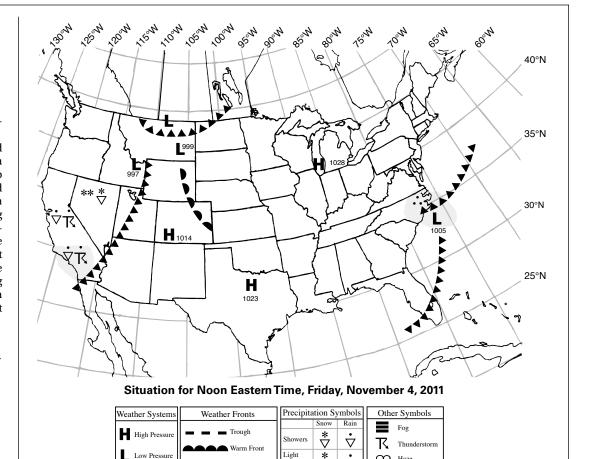
By Shaena Berlin STAFF METEOROLOGIST

Hundreds of thousands of people in the Northeast remain without electricity after an early Nor'Easter dumped heavy snow that downed trees and power lines on Sept. 29. Thankfully, temperatures have increased and no further precipitation is expected for the next few days. This should help enable utility crews to restore power lines as well as keep people without emergency generators from suffering too much from cold.

The upcoming weekend should be quite pleasant; a high pressure system will keep the Cambridge area dry and sunny, and you get to sleep an extra hour on Sunday morning due to the end of Daylight Savings Time! Sunrise will now be around 6:20 a.m., and sunset will be around 4:30 p.m. The days will continue getting shorter until Dec. 22, so plan your day accordingly so that you occasionally see the sun.

Extended Forecast

Today: Mostly sunny. High 52°F (11°C). Tonight: Clear and cold. Low 31°F (0°C). Tomorrow: Sunny. High 59°F (11°C). Tuesday: Sunny and warmer. High 60°F (16°C).



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Compiled by MIT Meteorology Staff

and The Tech

Europe, US market anxiety grows over Italy

By Graham Bowley

THE NEW YORK TIMES

When Italy issued 3 billion euros in bonds last week at an interest rate of more than 6 percent, it was about 1.5 percentage points higher than it had to pay as recently as last summer — and the most expensive 10-year money it had borrowed since joining the euro a

That cost — extracted by financial markets increasingly doubtful about Italy's ability to repay its loans — shows just how hard it is for indebted European countries to escape their raging financial crisis. Even as they frantically cut back their debt mountains through austerity measures, the debt servicing costs are piling up.

In Italy's case, the extra bond yields are adding as much as 3 billion euros (about \$4.1 billion) in additional interest payments annually, estimates Tobias Blattner, a former economist at the European Central Bank who is an economist at Daiwa Securities in London.

"That is a lot of money for

someone trying to cut their debt," he said. "Each day the situation deteriorates and you have to go back for more austerity measures to match them."

The interest rates on Italian debt fell back on Thursday after Greece called off its proposed referendum on the terms of its planned bailout, and the European Central Bank cut interest rates, announcements that cheered financial markets across Europe and the United States.

The Euro Stoxx 50 index, a barometer of eurozone blue chips, closed up 2.5 percent. The German DAX was up 2.8 percent and the CAC 40 in Paris rose 2.7 percent. The FTSE 100 index in London rose 1.1 percent.

In the U.S., the Standard & Poor's 500 index was up 1.9 percent, or 23.25 points, at 1,261.15, and the Dow Jones industrial average gained 1.8 percent, or 208.43 points, at 12,044.47. The Nasdaq rose 2.2 percent to 2,697.97.

Energy, industrials, technology and materials each rose about 2 percent, while financial stocks were up 1.12 percent.

The latest developments in Greece were seen as supportive for stocks, but "the big thing was the European rate cut and that is what is driving the market," said Doug Cote, chief strategist at ING Investment Management. "Investors are going to start nibbling around and going back to risk."

The Italian 10-year yield - rising to 6.352 percent on Thursday before falling back to 6.167 percent - remains uncomfortably high, and could move higher again, analysts said. Facing a confidence vote on Friday, the Greek government may still be forced to call for a new election. That would again call into question the entire rescue package for indebted European countries that was agreed to last week at a summit meeting in Brussels.

"Papandreou still has to face the confidence vote," said Win Thin, currency strategist at Brown Brothers Harriman in New York. "If he passes, he could still reintroduce the referendum. If he does not pass it, then the opposition is not happy about the current deal. It gets politically messy."

Greek leader calls off referendum on bailout plan

By Rachel Donadio and Niki Kitsantoni

THE NEW YORK TIMES

ATHENS, Greece - In a tumultuous day of political gamesmanship, Prime Minister George A. Papandreou on Thursday called off a referendum on Greece's new debt deal with the eurozone after winning a measure of support from his opposition and managed to repair, at least for a day, a major rupture in relations with Europe.

The decision to abandon his idea of holding a popular vote on the European debt deal did not end the political turmoil here; Papandreou still faces a rebellion in his own Socialist Party and the fury of some opposition figures, and he will have to weather a difficult confidence vote Friday. But talk of a possible unity government eased international fears of immediate new elections and a looming default if he did not survive in office, cheering markets in Europe and abroad.

In an address to his party's central committee Thursday evening, Papandreou said there was no need for a referendum now that the opposition New Democracy Party had said for the first time that it would back the agreement, reached last week, to write down Greek debt in exchange for austerity measures and a commitment to the euro as the nation's currency.

The prime minister invited the New Democracy Party to become 'co-negotiators" on the deal and later said that talks on a unity government should begin immediately. He also suggested that he would be willing to step aside so that others could form a unity government if he won Friday's confidence vote.

"I am not clinging to my seat,"

He made those comments after the New Democracy leader, Antonis Samaras, accused the prime minister of "deception." Samaras was angry that Papandreou appeared to be trying to hold on to his post after securing the opposition's

Papandreou's decision to call off the referendum followed three days of political volleyball that whipsawed world markets, shook the Continent to its foundations and drove angry European leaders to issue an ultimatum Wednesday demanding that Greece decide once and for all if it wanted to remain a part of the European Union and its currency bloc, the eurozone.

But after a day of political horsetrading, Greece's political storm began to look less like points of departure for Europe than hastily considered parliamentary maneuvers by a prime minister who was looking for a way to shore up support with both the Socialists and the opposition — or to negotiate a graceful exit. As has happened so often in the euro crisis, the fate of the European enterprise seemed to hinge on the political machinations of one of the union's smallest members.

Study finds big spike in poorest in the US

By Sabrina Tavernise THE NEW YORK TIMES

WASHINGTON — The number of people living in neighborhoods of extreme poverty grew substantially, by one third, over the past decade, according to a new report, erasing most of the gains from the 1990s when concentrated poverty declined. More than 10 percent of America's poor now live in such neighborhoods, up from 9.1 percent in the beginning of the decade, an addition of more than 2 million people, according to the report by the Brookings Institution, an independent research group.

Extreme poverty — defined as areas where at least 40 percent of the population lives below the federal poverty line, which in 2010, was \$22,300 for a family of four — is still below its 1990 level, when 14 percent of poor people lived in such areas.

The report analyzed Census Bureau income data from 2000 to 2009, the most recent year for which there

was comprehensive data.

The measure of concentrated poverty came into broad public use among academics in the 1960s, when civil unrest, the decline of blue-collar jobs and the flight to the suburbs left swaths of U.S. cities stranded in islands of poverty.

In "The Truly Disadvantaged," William Julius Wilson, a sociologist now at Harvard who pioneered the concept, argued that residents of such areas were more likely to experience joblessness, poor schools, broken families and high crime.

Living in such areas often led to poorer health and educational outcomes for children, creating higher hurdles for success as adults.

"It's the toughest, most malignant poverty that we have in the United States," said Peter Edelman, the director of the Center on Poverty, Inequality and Public Policy at Georgetown University. "It's bad outcomes reinforcing each other."

The data in the Brookings report

captures the first part of the decade most clearly, when growth in concentrated poverty was highest in metropolitan areas in the Midwest. Of the places where poverty concentrated the most, three were Midwestern: Toledo, Ohio, Youngstown, Ohio, and Detroit.

The report estimated that in metropolitan areas, worsening economic conditions in 2010 may have bumped up the portion of those living in concentrated poverty metro areas to 15 percent, a notch below the 1990 level, 16.5 percent. The biggest rises were in Sun Belt areas like Cape Coral, Fla., and Fresno, Calif., where the housing bust was biggest.

The Census Bureau's traditional measure of poverty tends to overstate poverty for some groups, because it does not take into account noncash government assistance for the poor, like food stamps and the earned income tax credit. Those programs lift millions of people above the poverty line.

Google tries to improve timeliness of searches

SAN FRANCISCO — Acknowledging that some searches were giving people stale results, Google revised its methods Thursday to make the answers timelier. It is one of the biggest tweaks ever to Google's search algorithm, affecting about 35 percent of all

The new algorithm is a recognition that Google, whose dominance depends on providing the most useful results, is being increasingly challenged by sites like Twitter and Facebook, which have trained people to expect constant updates with seconds-old news. It is also a reflection of how people use the Web as a real-time

"This is the result of them saying, 'We need to find a way to more effectively get fresh content up," said Danny Sullivan, editor of Search Engine Land and an industry expert. "It does help with the issue of people thinking, 'Wow, if I need to find out about something breaking, I'll go to Facebook or Twitter for that."

Google tried once before to create real-time search, in 2009, when it introduced google.com/realtime, a service that incorporated Twitter posts that Google paid Twitter to use. But that contract expired in July and the two companies could not agree on terms to renew it, so Google disabled the site.

-Claire Cain Miller, The New York Times

Cuba to allow buying and selling of property

MEXICO CITY — Cuba announced a new property law Thursday that promises to allow citizens and permanent residents to buy and sell real estate — the most significant market-oriented change yet approved by the government of Raul Castro, and one that will probably reshape Cuba's cities and conceptions of class.

The new rules go into effect on Nov. 10, according to Cuba's state-run newspaper, and while some of the fine print is still being written, the law published on Thursday amounts to a major break from decades of socialist housing. For the first time since the early days of the revolution, buyers and sellers will be allowed to set home prices and move when they want. Transactions of various kinds, including sales, trades and gifts to relatives by Cubans who are emigrating, will no longer be subject to government approval,

'To say that it's huge is an understatement," said Pedro Freyre, an expert in Cuban-American legal relations who teaches at Columbia Law School. "This is the foundation, this is how you build capitalism, by allowing the free trade of property."

-Damien Cave, The New York Times

Detroit mayor says city may need emergency manager

Detroit, wrestling with a budget gap and a shrunken tax base, may soon require intervention from a state-appointed emergency manager to save itself from financial ruin, Mayor Dave Bing has told other city leaders.

Such a notion would place the city's finances and operations under the control of an appointed manager only months after Michigan leaders vastly expanded the power of such emergency managers, including giving them the ability to set aside contracts with public workers' unions.

Bing's suggestion comes as Detroit, Michigan's largest city, faces a shortfall in its budget that is estimated to reach about \$150 million early next year and has no signs of an imminent solution.

"An emergency manager is what we want to avoid," said Dan Lijana, a spokesman for Bing, who briefed City Council members on the issue privately in recent days. "But if we don't address the \$150 million shortfall, there isn't another option."

Critics of the mayor, however, denounced the notion as unnecessary for Detroit and as an empty threat aimed at forcing concessions now from labor unions on health care costs and pension

-Monica Davey, The New York Times

Glaxo to pay \$3 billion in settlement with US

British drug company GlaxoSmithKline said Thursday that it had agreed to pay \$3 billion to settle U.S. government civil and criminal

The settlement would be the largest yet in a wave of federal cases against pharmaceutical companies accused of illegal marketing, surpassing the previous record of \$2.3 billion paid by Pfizer in 2009. In recent years, drug companies have been prime targets of federal fraud investigations, which have recovered tens of billions of dollars for Medicaid and Medicare.

The cases against GlaxoSmithKline include illegal marketing of Avandia, a diabetes drug that was severely restricted last year after it was linked to heart risks. Company whistle-blowers and federal prosecutors said the company had paid doctors and manipulated medical research to promote the drug.

GlaxoSmithKline had already set aside cash for the settlement, which analysts said would remove legal uncertainty. The company's stock rose 2.96 percent Thursday to \$44.55 a share, near its 52-week high, amid a broader market advance of about 2 percent.

This is a significant step toward resolving difficult, long-standing matters which do not reflect the company that we are today," GlaxoSmithKline's CEO, Andrew Witty, said in a statement. "In recent years, we have fundamentally changed our procedures for compliance, marketing and selling in the U.S. to ensure that we operate with high standards of integrity and that we conduct our business openly and

The agreement to settle its biggest federal cases should be completed next year, the company added in the statement. It said \$3 billion would settle not only the Avandia case, but also a Justice Department investigation of its Medicaid pricing practices and a nationwide investigation led by the U.S. attorneys in Colorado and Massachusetts into the sales and marketing of nine of its drugs from 1997 to 2004.

—Duff Wilson, The New York Times



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Did Fukushima kill the nuclear renaissance

No, that renaissance died right here at home

By Keith Yost STAFF COLUMNIST

In the aftermath of the Fukushima Daiichi nuclear disaster in Japan, many wondered what the event's impact would be on the nuclear renaissance in the United States. Those who follow the nuclear industry didn't need eight months of hindsight to give an answer: what nuclear renaissance?

The outlook for U.S. nuclear power has worsened considerably in the past five years. Where once there were plans for new reactors at more than 30 different sites, today there are only five, and even those planned reactors might disappear. Only one is actually under construction, and to credit the industry with breaking ground on a new reactor is overstating its prospects.

However, none of this gloom is the result of Japan's tsunami. On the eve of the Tohoku earthquake, U.S. nuclear power looked just as moribund as it is today. The cause of this decline is not renewed concerns about safety, or even that old red herring, waste disposal — instead, it is simple economics. Other technologies, particularly natural gas, offer much cheaper power than nuclear both today and in the foreseeable future.

In 2009, the MIT Future of Nuclear Power study released an update to its 2003 estimate of the costs of nuclear power. Estimating a capital cost of \$4,000/kW and a fuel cost of \$0.67/MMBtu, the study's authors projected a cost of new nuclear power of 6.6 cents/kWh. Using the same modeling approach, the cost of electricity from a natural gas plant with capital costs of \$850/kW and fuel costs of \$5.16/MMBtu would be 4.4 cents/kWh.

What's worse, the estimate of 6.6 cents/kWh assumes that nuclear power is able to secure financing at the same interest rate as natural gas plants. In reality, credit markets assign a significant risk premium to nuclear power, bringing its total levelized cost of electricity to 8.4 cents/kWh, nearly twice the cost of natural gas power. Unless the capital costs of new nuclear power plants turn out to be significantly less than what experts expect, or natural gas prices rise considerably in the near future, there is little reason to believe that any new nuclear plants will be built without significant subsidies.

This is not to say that nuclear power could not make a comeback within the next 10 to

20 years. But before nuclear can once again be considered a credible competitor to fossil fuels, four changes must happen.

The first problem facing nuclear power is its high capital cost. It is possible, of course, that one of the new reactor designs put forward by General Electric, AREVA, Westinghouse, or elsewhere will prove to cost significantly less than the \$4,000/kW estimate being circled about, but such chances are low, and it is just as likely that these reactors will come in at higher-than-expected costs. If AREVA's recent forays in Finland and France are any indication, \$4,000 might prove a rosy number. Assuming we don't live in a world in which nuclear power costs less than what we expect, nuclear is going to need to lower its capital costs, ideally to somewhere in the area of \$3,000/kW.

Reducing capital costs starts by ending the obsessive focus of universities on improving the fuel utilization of reactors. A significant fraction of nuclear engineers at MIT and other institutions across the world are spending their time researching new reactor types, developing enrichment and reprocessing technologies, or involving themselves in other areas in which the goal is to lower the cost of fueling a reactor. This is folly; fuel costs represent roughly 10 percent of nuclear power's total cost, and only five percent is the uranium itself — even if nuclear fuel was free, it wouldn't be enough to make nuclear cost-competitive with natural gas. Instead of funding yet another Generation IV reactor design or one more study of closed fuel cycles, the Department of Energy and Electrical Power Research Institute should put serious money into the development of technologies that offer potential improvements to capital costs - of the research at MIT, two good examples are high thermal efficiency fuels (fuel pins with geometric designs that make it easier to remove heat from the reactor), and nanofluid coolants, both of which could make it possible to get more power from the same

The second problem facing nuclear power is its high borrowing costs. To some extent, this problem is a natural consequence of nuclear power plants taking a longer time to build than natural gas plants and having a much higher construction risk (the capital cost of natural gas plants is well-established relative to that of nuclear power). And like-

wise, to some extent, this problem might resolve itself over time, both as the completion of nuclear plants helps nail down the true capital cost of nuclear power, and as vendors add smaller, modular reactor designs to their list of offerings. But much of the reason behind the high interest rates on loans to nuclear construction is that the industry is scoring an own-goal. In the current relationship between utilities and reactor vendors, utilities are asked to absorb all of the costs of a vendor's overruns — if a reactor ends up costing a couple billion dollars more than the vendor quotes, it's the utility that is expected to make up the difference.

This is terrifying for a utility's creditors. The largest utilities in the United States have market capitalizations in the area of \$30 billion, while most hover closer to \$5 billion. If a nuclear project should fail, the utility might go completely bankrupt, leaving nothing to those foolish enough to lend them money. Accordingly, nuclear projects face higher borrowing costs than other electric projects. It doesn't have to be this way — if reactor vendors and construction companies helped share the project risks posed by nuclear plants, borrowing costs would be lower. It is also possible for the U.S. government to shoulder some of the risk - but after Solyndra, few legislators have an appetite for letting energy companies push their risks onto the taxpayer.

Next, the United States is going to have to adopt some form of carbon tax on electricity generation, or offer a comparable subsidy to the nuclear industry. An appropriately sized carbon tax of \$20/ton CO2 would raise the cost of natural-gas-generated electricity by 0.7 cents/kWh, while having a negligible impact on nuclear power.

And finally, the nuclear industry is just going to have to catch some luck and see natural gas prices rise. That's a tall order, given the new resources being opened up by hydraulic fracturing and the slowed consumption of natural gas brought about by the recession. But it's not entirely outside of the realm of possibility — the futures market for natural gas has been wrong before.

Nuclear power is down, but not out. With a proper R&D focus, good business practices, appropriate policy, and a little luck, the gulf that separates nuclear power from its competitors may yet be bridged.

Still, it'd be best not to hold your breath.

From the desk of the 1 percent

By Mark Wittels

I have been informed by one of my simpering, sycophantic servants that "the people," as the serfs of this principality laughingly refer to themselves, have recently risen in protest. On every corner of New York City, it seems, one cannot so much as raise one's head from the velvet embrace of a gilded palanquin without being accosted by the stench of these ne'er-do-wells and their grade-school Marxism, each clawing for a sip of the proverbial chocolate milk. Fie, I say, this is my milk, and no discount base-ball card or pennywhistle shall convince me otherwise!

It seems they suffer the misconception that the majority of this country's wealth resides in coffers deep within the pleasure palaces of the so-called "1 percent." For those of us privileged with the gift of literacy, it should be obvious that this wealth is in fact controlled by a far more exclusive cabal. I, a man of moderate means among those with the gumption to not have been born poor, have had the pleasure on multiple occasions of hosting a caviar affair at which more than nine-tenths of the wealth of this country was represented.

I recall many a time when the masses poked their heads from beneath the polished leather boot of their masters in industry and politic, their soot-caked faces pleading for their meager "rights" to be extended to the Irishman or the Catholic. What is to be done on this occasion, when, as my spokesmen in the television stations and their print counterparts have dutifully spoon-fed into the slack-jawed and drooling mouths of John and Jane Q. Public, the demands of these miscreants are unclear? Provide a boot with a slightly softer sole? This fails to satisfy these

addled peasantry, besotted with the electronic novocaine we so gladly provide them in the form of digital phonographs and miniature Edison machines.

No, I say it is time for we captains of industry to reach out to the cold and huddled masses, reach out with a hand of friendship so that we may grab them by their filthy coat-tails and toss them back into the motorcar plants and pitch-black Emmentaler mines from whence they came. And so I say, to any provocateur who may be using this broadsheet as pitiful insulation against the coming winter: we welcome the opportunity to open a dialogue and discuss your complaints. Now get back to work.

Dictated, not read, Prescott Quincy Wainwright Mark Wittels is a member of the Class of 2013.

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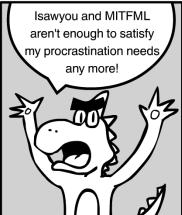
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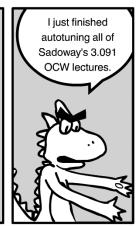
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Arthursaurus Rex by Ramya Swamy











Sudoku

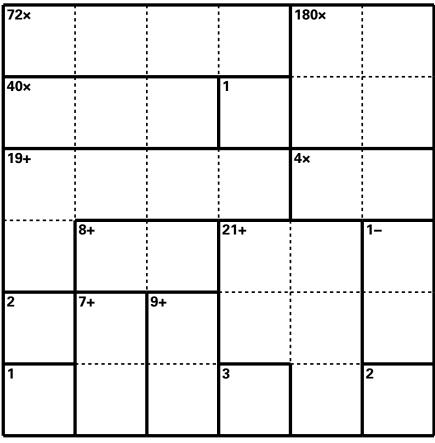
Solution, page 7

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	9	3			1			7

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

Techdoku

Solution, page 7



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.

Dilbert by Scott Adams





Crossword Puzzle

Solution, page 7

ACROSS

- 1 Vino region 5 Was defeated by
- 11 Letters for shock treatment
- 14 Any time now
- 15 Provo resident
- 16 Quid pro_
- 17 Start of Ed Howe quip
- 19 Mentalist Geller 20 River ends, often
- 21 "Scream" director Craven
- 22 Down with the flu
- 23 Ford dud
- 24 Scottish uncle
- 26 "Fiddler on the Roof" role
- 28 Part 2 of quip
- 31 Aged

38 Cover

- 34 Egg-coloring brand 35 Emetic medication
- 40 Part 3 of quip
- 42 Casa chamber 43 Birthplace of St. Francis

- 45 Em, to Dorothy
- 47 Drink like a dog
- 48 Part 4 of quip 51 University of Maine town
- 53 Citrus drink
- 54 Brahman, e.g.
- 58 Reed or Rawls
- 59 Scram!
- 61 Seal engraved on a ring 62 Lodging house
- 63 End of quip
- 66 Tenth mo.
- 67 Can skip 68 Bygone time
- 69 Urgent letters
- 70 One thing after another
- 71 Jewish month

DOWN

- 1 Off the record
- 2 Planted seeds 3 Works strenuously
- 4 Part of a foot 5 San __ Obispo

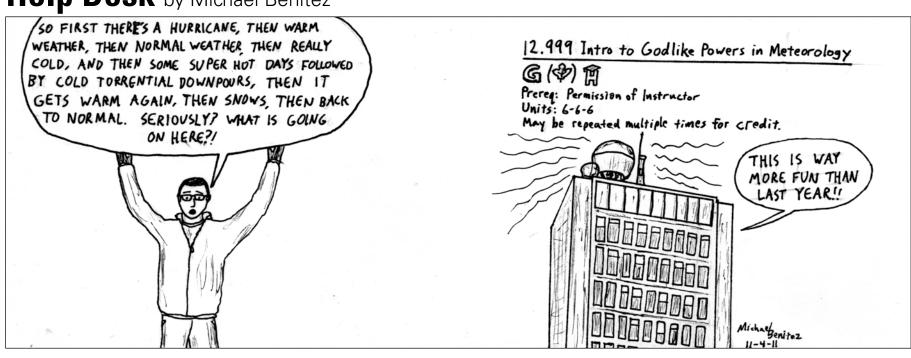
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- 7 Adage
- 8 What's worldwide
- 9 Container weight
- 10 Ballroom dance
- 11 Undecided
- 12 Like Shirley Temple's hairdo
- 13 Linen fabric 18 Billy of the Dead End Kids
- 24 Biblical twin
- 25 Lost 27 Somme summers
- 29 Flavorful
- 30 Hansen of NPR's "Weekend Edition"
- 31 Egg cells 32 French article
- 33 Sale savings
- 36 Fla. neighbor 37 Ceiling
- 39 Pride member
- 41 Gospel writer 44 Catchphrases
- 46 Implied
- 49 Shaving foam
- 50 Honshu city
- 51 Medleys
- 52 Popeil company
- 55 Woman's netlike cap
- 56 Aguarium fish
- 57 Old-time anesthetic

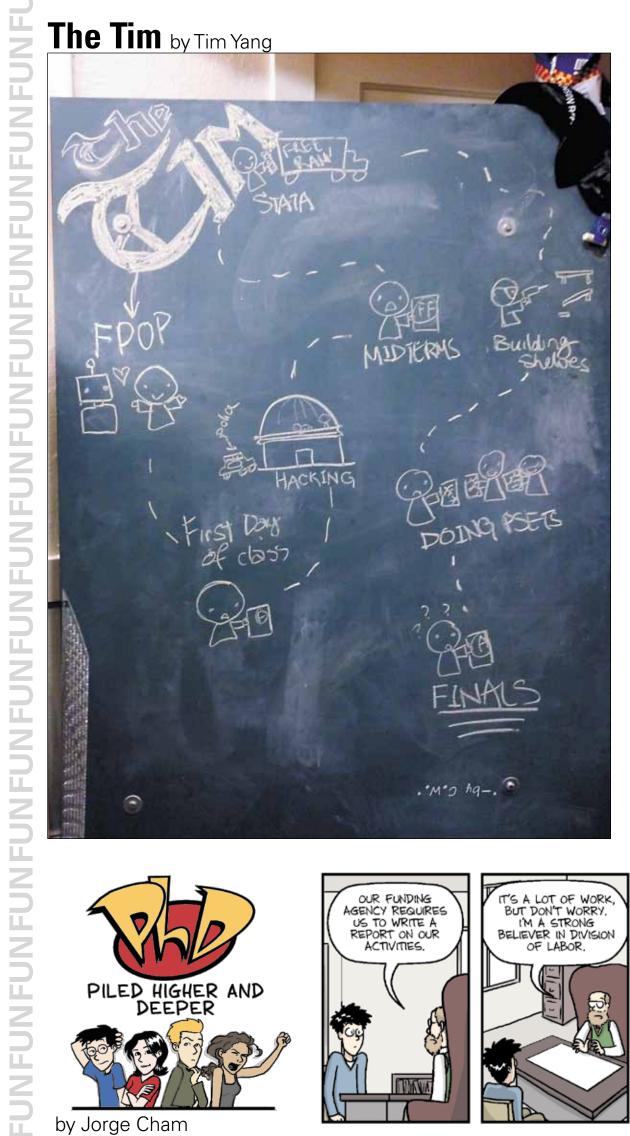
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6 THE TECH Friday, November 4, 2011

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THEATER REVIEW

In thunder, lightning, or in rain?

Madness — and magenta-haired witches — abound in Shakespeare Ensemble's superb production of Macbeth

By Daniel Parker

The MIT Shakespeare Ensemble's production of Macbeth summons such a strange intensity that the suspension of disbelief is hardly "willing": we have no choice as the audience but to accept the truth of the tragedy taking place before us and partake viscerally in the trials of its

The story is familiar. Two generals, returning home from battle, are waylaid by three witches, who pronounce to one: "All hail, Macbeth, thou shalt be king hereafter!" To the other, they prophecize: "Thou shalt get kings, though thou be none."

The plot of Macbeth is only the fulfillment of these prophecies. Yet the play is captivating, even enthralling, for we must consider what seems to be a deep conflict between the force of human will, especially the malicious power of Lady Macbeth, and the fatalistic world where the entire tragedy of Macbeth is predicted by the witches and enacted, much to their amusement.

It is that quality of inevitability that propels director Lance Norris's production forward. We meet Macbeth (Chris Smith '11) as a triumphant general, his masculinity reassuring as a beacon of wholesomeness and stability in a bleak surrounding of corpses on the field of battle. We leave

Macbeth after his descent into madness and, in the end, his death. A terrific guilt has engulfed his mind. Urged by his wife's assault on his manliness - "When you durst do it, then you were a man" - he has murdered Duncan, the king of Scotland, and then ordered the slaughter of rival Macduff's wife, young son, and infant. When Macbeth learns of his wife's suicide, silence envelops the theater, and we hear a just-perceptible sob. Stunningly, then, he begins laughing crazily, desperately, in a telling confirmation of the wreckage of his humanity.

We have no choice but to accept the tragic truth and partake viscerally in the trials of its characters.

Lady Macbeth (Katherine A. Roe '14) immediately demonstrates her ambitious nature: upon learning of the witches' prediction that Macbeth will be king, she delivers the famous "unsex me here!" soliloquy, addressing the "spirits that tend on mortal thoughts": "fill me from the crown to the toe top-full of direst cruelty! Make

thick my blood; stop up the access and passage to remorse, that no compunctious visitings of nature shake my fell purpose."

But we leave her in one of drama's greatest scenes of debilitating guilt and fear that her part in the murders will be found out. She sleepwalks into a chamber where stand a physician and a waiting-gentlewoman, and begins rubbing her hands, plagued by the hallucination of indelible bloodstains: "Yet here's a spot"; "Yet who would have thought the old man to have had so much blood in him"; and, climactically: "Here's the smell of the blood still: all the perfumes of Arabia will not sweeten this little hand!"

The following words of the doctor strike at the heart of the audience: "More needs she the divine than the physician."

The strongest thread in this staging is the degeneration of Macbeth and his Lady into madness. The two students' commanding performances give a seriousness to the production that prevents the farce sometimes attendant on young people's performances of Shakespearean tragedy.

An interesting decision on the part of the set designer (Adam K. Strandberg '14) is in the design of the Macbeth crest, which is dominated by the head of Medusa the Gorgon. Surely, this is a reference to the horror of the slaughtered king Duncan, whose body is discovered by nobleman

Macbeth

Directed by Lance Norris October 28-30, November 3-5

La Sala de Puerto Rico, MIT **Student Center**

Macduff (Keenan A. Sunderwirth '14) who proclaims, "Approach the chamber, and destroy your sight with a new Gorgon." More widely, the reference is to the horror of Macbeth's tyranny.

The actors are not the only excellent part of the production. The combination of the sound (Christopher D. Smith '12) and lighting (Elaine M. Kung '15) schemes lend immediacy to the setting, chill castles and grim battlefields alike. Indeed, the transformation of the lofty and open La Sala de Puerto Rico into an intimate theater space is itself notable, as is, the success of the stage manager's (Kellas R. Cameron '10) and set designer's demarcation between the outside world of the Student Center, perfumed with Subway sandwiches, and the inside world of Macbeth — supernatural, tragic, and populated with grotesque apparitions and magenta-haired witches.





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Daniel Drezner is professor of international politics at the Fletcher School of Law and Diplomacy at Tufts University.



Stephen Van Evera is Ford International Professor in the MIT Political Science Department.

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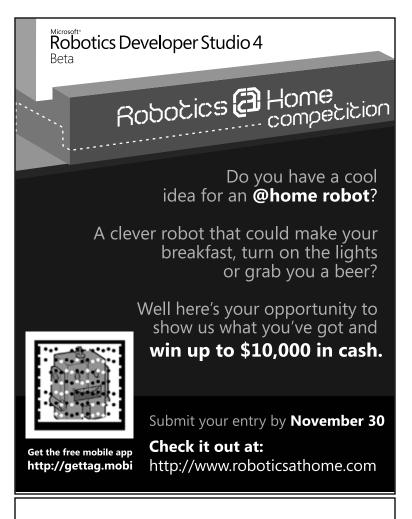




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Anderson is new IFC president

IFC Elections, from Page 1

chairs, from different fraternities and an IFC wiki that will contain resources for future fraternity chairs.

"My vision is increased awareness of the fraternal community within the general MIT community and really showing the excellence that goes on," Anderson said.

Anderson also wants to increase dialogue with the Dormitory Council and housemasters. "I'd love to get out there and meet with [housemasters] and hear their perspective and what they think of the IFC." Anderson said. "I know there are a lot of misconceptions about how we operate and how our judicial branch works."

At the next Presidents' Council meeting, Anderson will be meeting with the new executive board on Monday to discuss and prioritize new initiatives and ideas with the fraternity presidents.

"I'm very excited to get started working with the new exec board," Anderson said. "Everyone has a lot to bring to the table, a lot of different skill sets and backgrounds. I'm ready to dive in and start to get things going."

—Joanna Kao

Megamimo wins \$5,000 grand prize

Wellwatcher, Podimetrics run up

Elevator Pitch, from Page 1

Sri Lankan education to reducing the size of voltage conversion chips in mobile phones. Some ideas had already produced patented technology, while others had been conceived just days before the competition.

The winner of the \$5,000 grand prize was Megamimo, a Wi-Fi optimization system. The judges chose Wellwatcher, a landfill methane collection system, and Podimetrics, an ulcer-predicting insole for diabetics as runners up. Each received a \$2,000 prize. The Podimetrics team also won the \$1,000 audience choice award based on text message voting.

Megamimo was pitched by MIT graduate student Hariharan S. Rahul, who worked with fellow student Swarun Suresh Kumar G and advisor Dina Katabi PhD '03. Their idea, which has been in development for two years, uses signal processes that work with existing Wi-Fi protocol to greatly increase the efficiency of data transfer by processing multiple requests simultaneously in the same frequency band. Current wireless systems can alow only a

single transmission at any time in a particular frequency band. "The hardest part was to convey some sense of how it works without going into too much technology in under one minute," Rahul said.

Podimetrics was pitched by Sloan MBA student Jonathan D. Bloom. He and four others developed the idea for a temperature-detecting insole to assess the risk of ulcers in diabetic patients at the Hacking Medicine Competition just a week before the Elevator Pitch Contest. Bloom, who has an MD, said, "As a physician, I love when you can help one person at a time, but I think this is an opportunity to help really large groups of people."

The other two contests in the \$100K Entrepreneurship Competition are the ACCELERATE Contest and the Business Plan Contest. At the end of the finale, MIT \$100K announced that the new ACCELERATE Contest will replace the Executive Summary Contest in the \$100K Competition. Twenty-five teams will receive mentorship and \$1,000 to develop their ideas before competing for a \$10,000 prize. The deadline to register for ACCELERATE is December 2.

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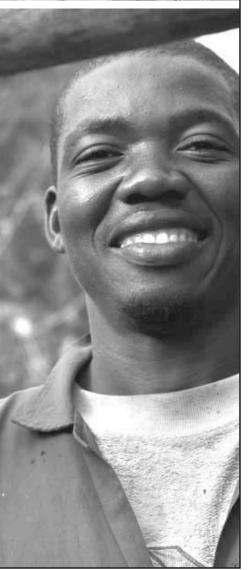
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Cambridge City Council candidates, part II

By Adisa Kruayatidee

PHOTOGRAPHS FROM VOTE.RWINTERS.COM

Tuesday, Nov. 8 marks election day in Cambridge. On Tuesday we profiled eight candidates for Cambridge City Council, and today we follow up with nine more. The following information was compiled from interviews with the candidates, or, if they did not respond to *Tech* inquiries, information from *http://vote.rwinters.com* (many thanks to Robert Winters!).



Gregg J. Moree

Platform

- •Innovative planning to solve city problems, such as hydroponic greenhouses (mini gardens that are easily maintained anywhere).
- •Increased funding for public services: firefighters, police, teachers, and emergency medical technicians.
- Preserve Cambridge's rich culture, experience, tradition and history as we move forward.
- •Renew City Manager's contract.



Denise Simmons

Background: 6 terms on council, 2008-2009 mayor; small business owner and lifetime Cambridge resident

Platform:

- •Seniors: access to fully-funded senior centers and reliable public transportation.
- •Creation and retention of affordable housing; aid in finding gainful employment.
- •Support small businesses.
- Quality education for children: parental workshops, more collaboration between council and school administrations.



Marjorie C. Decker

Background: 6 terms as councilor; graduate of Harvard Kennedy School

Platform:

- •Increase affordable housing options.
- Support GLBT rights.
- •Consolidate and clarify city resources for Cambridge parents and children.
- •Environmental initiatives involving Cambridge youth (monitor and reporting with city).



Tim J. Toomey

Background: 11 terms on council, 2 terms on Cambridge School Committee, State Representative of Cambridge and Somerville, co-creator of Cambridge Energy Alliance

Platform:

- •Quality of life and public safety: increased bicycle patrols, expanded anti-drug unit, noise ordinances, support for neighborhood initiatives.
- •Reduce expansion of commuter rail traffic through Cambridge; encourage ride sharing, mass transit, and bicycling as alternative transportation.
- •Intelligent expansion of business in Cambridge, especially revitalizing Kendall Square with housing and retail development.
- •Utilizing green technologies (LEED certification standards met for new projects, solar panels for municipal buildings, recycle old building materials).



David P. Maher

Background: Current mayor, 6 terms on Council, four terms on Cambridge School Committee; Director of Development for Cambridge Family and Children

Platform:

- Cooperative neighborhood coalitions: improve zoning requirements, reducing potential density, etc.
- ing requirements, reducing potential density, etc.
 •Improved relations between local businesses and universities.
- Renewing Cambridge's public school system with focus on elementary and middle schools.
- focus on elementary and middle schools.

 •Affordable housing: promote public and private
- •Maintain quality public safety services; road and sidewalk improvement.
- •Discussion of possible changes to property tax legisla-



Craig A. Kelley

Background: 3 terms as councilor; environmental consultant (Greenpeace, Boston College Law School)

Platform

- •Long-term, sustainable housing policy.
- •Fairer and more predictable property taxes.
- •Local neighborhood concerns (overdevelopment, potentially dangerous business uses in residential areas, etc.).
- •Safe streets: citywide traffic enforcement and education policy
- •Strong school system: budgetary oversight and more teamwork with public school system.



Sam Seidel

Background: 2 terms as councillor; background in urban planning (president of board of Margaret Fuller Neighborhood House)

Platform:

- •Expand early childhood education options.
 •Reduce carbon footprint: encourage more efficient transportation, and make Cambridge a more bikefriendly city.
- •Urban planning: main projects include development of Kendall Square, Central Square, and Massachusetts Avenue corridor. Requires full involvement of neighborhoods and universities. Possible aftereffect to consider: economic competitiveness.

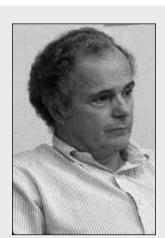


Kenneth E. Reeves

Background: 11 terms on council, 3 terms as mayor, 3 terms chairperson of Cambridge School Committee

Platform

- •Close achievement gap in public schools, particularly for minority students (are majority of student popula-
- •Mentoring initiatives similar to Baby University, program that helps parents of children ages 0–3 prepare for future academic success.
- •Implement final report of mayor's Red Ribbon Commission concerning Central Square: make Central better place to work, live and play; foster better relations with MIT



Gary W. Mello

Background: Lifetime Cambridge resident

Platform

- •Cap city budget at \$450 million per year (5% reduction, return to 2010 spending).
- •Cambridge Health Alliance as baseline insurer for all city employees: keep money in house; will reduce cost of employee health insurance.
- •Transition to new City Manager in March 2012.
- Affordable housing; alleviate overly populated neighborhoods
- •Transition to new water supply: Cambridge's drinking water currently sourced from watershed alongside state's busiest highway.

Price of

nano lab

MIT looking for

new site after

TBD

PhD movie screening draws over 800 attendees, overflows 26-100

Thursday night, a line of people that extended from Building 26 down the Infinite Corridor to Lobby 10 waited to watch the film adaptation of Jorge Cham's PhD (Piled Higher and Deeper) comics. The majority of the attendees, perhaps unsurprisingly, were graduate students.

Ironically, several PhD students near the back of the line couldn't get there earlier because a meeting with their adviser ran late (Cham often parodies the tension between graduate students and their advisers in his comic). There was an overflow of about 250 people after seating capacity (566) was reached, and many people stayed in the waiting area outside of room 26-100 in hopes of grabbing seats abandoned by early leavers.

The PhD movie is a comedy that follows the lives of four graduate students as they navigate their way through the unique culture of academia. The showing at MIT was followed by a live Q&A with Cham and cast members Evans T. Boney '06 (Mike Slackenerny) and producer Margaret A. "Meg" Rosenburg '07. The movie was first screened on Sept. 15 and is currently showing on hundreds of academic campuses worldwide.

—Kali Xu



KAILIANG CHEN

The Tech caught up with Cham for a video interview yesterday. Look forward to that early next week, but in the meantime, check out a teaser at http://tech.mit.edu/ V131/N50/phd/video.html.



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The Barry M. Goldwater Scholarship and Excellence in Education Program was

who intend to pursue careers in these fields.

established by Congress in 1986 to honor Senator Barry M. Goldwater, who served his

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scientists, mathematicians, and engineers by awarding scholarships to college students

Sophomore scholarship recipients will be eligible for two years of scholarship support. Junior scholarship recipients will be eligible for one year of scholarship support.

If you feel you are qualified for one of these prestigious awards, please discuss this

with your academic advisor or your Department Head.

Nominations must be from YOUR DEPARTMENT and are due at the School of

Science or School of Engineering Dean's Office (as appropriate to your major) by

Monday, November 14, 2011

For further information:

Contact your Undergraduate Officer, http://www.act.org/goldwater/ or http://web.mit.edu/engineering/goldwater.html

School of Engineering contact: Maria Marangiello, x3-8012, mariam@mit.edu School of Science contact: Elaina Burke, x4-5691, eidzenga@mit.edu

The Goldwater Program provides scholarships of up to \$7500 per academic year.

Senate. The purpose of this program is to provide a continuing source of highly qualified

- convenient Cambridge location

Origami Convention

Origami Classes * Origami Exhibition * T-shirts * Fun * Paper Folding! Classes and workshops available for beginners and veterans alike!

Saturday, November 19th 9:00am - 8:00pm

Registration Cost:

MIT Students ----- \$5 Non-MIT ----- \$20

Anyone on Convention Day --- \$30

Register Today!

http://origamit.scripts.mit.edu/convention.php

Free screening of

Between the Folds

an Origami Documentary and 2010 Peabody Award Winner

Followed by Q&A with OrigaMIT

Friday, November 4th 7:00pm - 9:00pmRoom 6-120





Graduate Women at MIT

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Opening Keynote by Christine Furstoss (Technical Director, GE) Monday, Nov. 7, 5-6 PM, MIT, 32-155

Entrepreneurship Panel

Bettina Hein (Pixability), Daphne Zohar (Pure Tech Ventures), **Prof. Rosalind Picard** (Affectiva Inc. & MIT)

Tuesday, Nov. 8, 4:30-6 PM, Whitehead Inst. Auditorium

From Unlocked to Unleashed: **Leadership In Your Life**

Closing Keynote by Lila Ibrahim (Partner, KPCB) Thursday, Nov. 10, 10-11 AM, Whitehead Inst. Auditorium

* Plus Networking Reception and Workshops! http://leadership.gwamit.org









Osborn Triangle falls through Nanolab, from Page 1

"Our facilities are limited," said Schmidt. "We have known for a long time that we were facing a day when we needed to improve our infrastructure."

According to Schmidt, the new nMaSS lab will have office space and lab spaces housing the "most technically sophisticated" research equipment used at MIT, including clean rooms and ultra-low vibration spaces for imaging.

Planning, design, and site selection for the new laboratory is

Chiefly, MIT must figure out where to put the new laboratory. For the past six months, the Institute has been looking at various sites on campus for the location with the lowest possible levels of vibration and electromagnetic interference, which can interfere with the sensitive equipment used in this type of research.

The Osborn Triangle — the site bounded by Main, Albany, and Osborn Streets — was originally thought the most favorable. However, measurements showed high levels of electromagnetic interference because of its proximity to the Red Line.

The Institute is exploring other sites on and around campus but is withholding names until a specific site is selected. Some of these sites are already developed, so the nMaSS lab will likely require the demolition of existing buildings in addition to new construction.

Retrofitting older buildings as was done to Building 39 in the 1980's - is very difficult, said

Schmidt. There is no building design yet, but there is a rough estimate of the amount of space needed for the new facility. Faculty with nano-research equipment and major labs, like the Microsystems Technology Lab and the Center for Materials Science and Engineering, have given input

need and what that space needs to look like," said Schmidt. Though MIT does not have an exact pricetag on the project, Schmidt says these types of buildings are the most costly to construct

regarding "how much space they

"We want to maximize its use," Schmidt said. "Planning is critical."

due to technical requirements.

Progress on the lab is constrained by site selection and building design, as well as the fundraising. No date is specified for nMaSS's construction, but researchers are looking forward to using the new space. "Researchers will say that we need it very soon," said Schmidt.

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FRIDAY, NOVEMBER 4, 2011 THE TECH 11

UA plans to revamp election system

UA Senate, from Page 1

a write-in candidate, a fact unknown to her until she won the election. "I just didn't have time for it," said O'Brien, who was surprised by her election and frustrated that the senate meeting was only one week after she found out. "I would've liked to know that I was at least in the running."

To fix such problems and improve elections overall, Miramonti said that the UA is currently working on its Election Code to "revamp the way [they] do elections." He said that the current voting system is "based on outdated technology," and that the voting website "looked like a bad Geocities page."

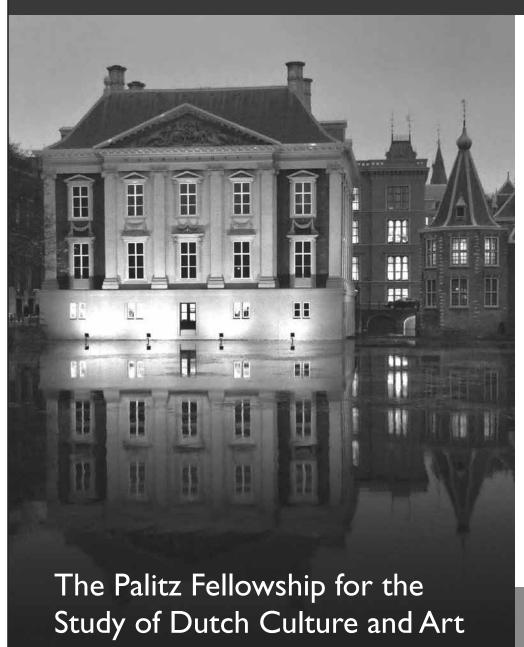
The voting system will be getting a "visual facelift" and improved mechanics, hopefully by the spring elections, according to Miramonti. This will allow the UA to have more flexibility with the election process, including possible notifications to write-in candidates of their nomination, which would prevent situations such as the one O'Brien found herself in

—Bruno B. F. Faviero



The MIT Concert Band performed its annual Halloween Concert in the Student Center on the evening of Sunday, Oct. 30. The performers were in full costume, dressed as characters like Superman, a cowboy, a pirate, a mushroom from Mario Kart, and deadmau5.

Summer Study in The Hague



Spring semester in preparation with a faculty supervisor, followed by summer in The Hague, Netherlands

Who may apply?

MIT students may apply no later than the fall term of the junior year. For eligibility requirements and other details, visit shass.mit.edu/palitz

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Application process

Application contents include transcript, resume, research proposal, letters of recommendation. For full information and instructions see shass.mit.edu/palitz

Apply by December 9, 2011 shass.mit.edu/palitz

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Soccer defeats Wellesley, 1-0 Team next faces Wheaton in conference semifinal

By Mindy Brauer

DAPER STAFF

Emily Kuo '13 scored in the 23rd minute, and Meghan S. Wright '13 made some key second-half saves as the MIT Women's Soccer team scored a 1-0 victory over Wellesley College in a NEWMAC tournament quarterfinal at Roberts Field in Steinbrenner Stadium on Tuesday. With the win, MIT, the No. 3 seed, advances to a semifinal matchup with No. 2 seed Wheaton College on Saturday.

Most of the beginning of the game was played in the midfield area as both squads probed to find openings in the defenses. Sophomore Rachel A. Dias Carlson had an early shot for MIT, as did Wellesley's Ava Mokhtari, but both were easily turned aside by the goalkeepers.

MIT's attack started to pick up in the 20th minute and the momentum it generated eventually led to what turned out to be the only goal of the game. In the 23rd minute Rachel A. Dias Carlson '14 slipped a pass through the Blue defense to Kuo, who was open to the left of the Wellesley goal. She corralled the ball and fired off a shot from 12 yards out that found the back of the net for her team-leading sixth score of the season.

Wellesley had a solid chance at the equalizer late in the half when Emily DeVito found herself open in front of the MIT goal, but her shot sailed high and the game remained at 1-0 at the half.

With the win, MIT advances to a semifinal matchup with Wheaton.

In the second half, the Blue put pressure on the MIT defense and got an early opportunity five minutes in on a shot by Chelsea-Ann Patry, but the shot was knocked down by the Engineers defense. Wellesley got off another pair of shots 10 minutes later from Emily Wilson and Truchi, but Wright was up to the task, saving both to preserve the MIT advantage.

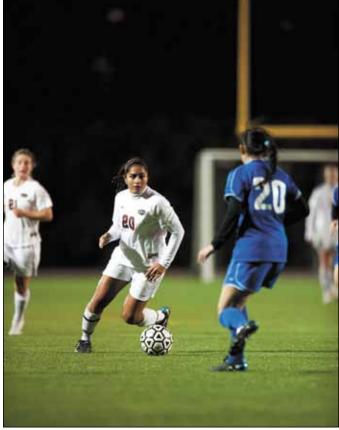
In the 74th minute Wellesley had its best chance at the equalizer. A scramble in front of the MIT goal resulted in the ball popping back out to the Blue's Emily Wilson. Wright was initially out of position to make the save, but by the time Wilson settled the ball and took a shot, Wright had recovered enough to make a diving stop.

MIT came close to expanding its lead in the 79th minute when Ambika M. Krishnamachar '15 got free for a good shot opportunity, but Wellesley's Claire Cerda, who came into the game at halftime, made a diving stop of her own to keep it a one-goal game.

Wellesley picked up a pair of corner kicks in the 80th minute, but was unable to generate a scoring opportunity off of either as the Engineers held on to take the win and advance to the semifinal

Wellesley outshot MIT, 13-11, but Wright was able to save all eight shots that found their way on goal. Cerda and S.J. Gray, who started the game for the Blue, each recorded four saves.

MIT (13-3-2) will play Wheaton on Saturday, Nov. 5 at 3:00 p.m. in a semifinal game that will be held at Springfield College.



Ambika M. Krishnamachar '15 prepares to maneuver past a defendant during a game against Wellesley Tuesday night. MIT won the game 1-0 to advance to the semifinal round in the NEWMAC women's soccer tournament.

Sailing — Crews Regatta

9:30 a.m., Charles River

UPCOMING HOME EVENTS

Saturday, November 5

Men's Water Polo vs. Harvard 12:30 p.m., Z-Center Pool Football vs. Endicott 1 p.m., Steinbrenner Stadium

Sunday, November 6

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Women's Volleyball beats WPI

With 3-1 win, Engineers advance to NEWMAC semis

By Paul Dill

In a hard-fought battle, No. 4 seeded MIT emerged with a 25-19, 18-25, 25-16, 25-22 victory over No. 5 WPI in a NEWMAC Women's Volleyball Championship Tournament quarterfinal match on Tuesday night. MIT improved to 23-10 on the season and for the second year in a row, it will face host and top seed Springfield College on Saturday, Nov. 5 at 1:00 p.m. Visiting WPI finished its campaign with a record of

With the first set tied at five, MIT mounted an 8-2 run to take the lead for good. WPI countered by scoring 7 of the next 10 points, trimming its deficit to 16-14. A kill from Trinity P. Leonard '13 and a hitting error gave MIT some breathing room; however, WPI narrowed the gap to three on a trio of occasions, the last at 22-19. Strikes by Kristine A. Bunker '14 sandwiched an ace by classmate Sharon S. Hao '14 to end the frame. WPI quickly established a 6-2 advantage in the second stanza, but MIT battled back and captured a 10-8

edge on a kill by Rachel Hunt '14 and an ace from Katie K. Spielbauer '13. WPI's Elyssa Dorenfeld replied with a kill and ace of her own before MIT posted a 5-2 spurt to go up, 15-12. The visitors then generated a 13-3 run to close the game and even the match at one set apiece. Like the previous set, WPI had a 6-2 lead and the host Engineers chipped away at the deficit, eventually going ahead 11-10. After a WPI timeout, both squads traded points until MIT put together a 10-1 run to take control of the set at 23-14. WPI posted the next two points, but MIT took the next two for

Kelly E. Schulte posted 16 kills and four digs while eight kills and four blocks.

In the final frame, WPI held a 6-4 edge, which was erased by five unanswered points from MIT. Miscues by the Engineers kept WPI within two points; however, a pair of aces from Natasha H. Jensen '12 and a kill from Hunt increased MIT's cushion to 16-10 and forced a timeout. Following the break, WPI picked up points in bunches and once again found itself trailing by two (20-18). After its own timeout, MIT scored four of the next five points with back-to-back kills from Bunker resulting in match point. WPI responded with a Kim Woodward kill and two aces from Bailey Sarber, extending the contest and prompting another MIT timeout. Once play resumed, Leonard pounded a kill to secure the victory.

Kelly E. Schulte '12 posted 16 kills and four digs while Bunker finished with eight kills and four blocks. Leonard tallied seven kills, six digs, and three aces as Cecily L. Joujon-Roche '12 registered five kills, two blocks, and an ace. Hunt rounded out the attack with six kills while Spielbauer collected 18 digs and one ace. Jensen notched five aces and three digs while sophomore Jessica L. Fessler '14 tacked on four digs. Alyssa L. Rothman '13 totaled 27 assists and two blocks as Nicole C. Gagnier '15 dished out 10 assists.

Bunker finished with

Depression is a bunch of symptoms exhibited by weak people.

b Depression is an unbearable suppression of brain activity that can strike anyone.

Straightening out all the misconceptions, the correct answer is 'b'. It's a concept we should all understand and remember, and here's why. Depression strikes millions of young adults, but only 1 out of 5 ever seeks treatment for it. Too many just drag themselves along or eventually seek relief through suicide. Why not treatment? Partly lack of awareness. Partly

the unwarranted negative stigma. This is what needs fixing. This is where we need you to change your attitudes. It's an illness, not a weakness. And it's readily treatable.

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