



Infoteca's E-Journal



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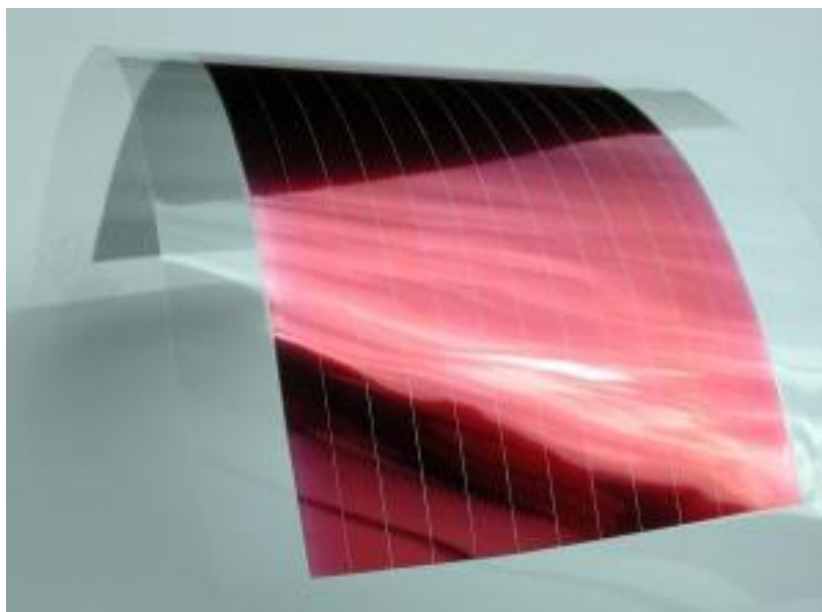
CONTENTS

Organic Solar Cells: Electricity From A Thin Film	3
Prostate cancer screening 'hope'	4
'Diet' foods weight gain puzzle	6
Doctors Use Wii Games for Rehab Therapy	8
Pushing Paper Out the Door	10
U.S. Universities Rush to Set Up Outposts Abroad	12
When everyone's an author	19
In Moscow, Norman Foster's Crystal Island is a towering ode to the moneyed class	23
Tobacco Could Kill One Billion By 2100, WHO Report Warns	25
New Finding May Help Explain Development Of Preeclampsia	27
Smart Pillbox Beeps And Flashed At Pill Time, And Won't Let You Take Them Twice	28
Computer Interaction Gets Some Humanity	30
Intersex Fish Linked To Population And Agriculture In Potomac River Watershed	32
History Of Quaternary Volcanism And Lava Dams In Western Grand Canyon	34
Microneedles Enhance Drug Administration Through Skin	35
Want Healthy Gums? Hit The Dairy Aisle	38
Dust Storms In Sahara Desert Trigger Huge Plankton Blooms In Eastern Atlantic	39
Irregular Exercise Pattern May Add Pounds	40
Hearing The Sound Of Quantum Drums	42
Flying reptiles came in miniature	44
Is Virtual Destruction an Art Form?	45
A Hamlet ballet worthy of the Dane	46
Low morale devastates art colleges	48
The Impossible Art of Deciphering Manuscripts	50
Can Liberal Arts Colleges Be Saved?	54
Double Exposure	61
Learning to Lie	63
High Blood Pressure Pill Cuts Risk Of Parkinson's Disease	71
Chinese dance shows off its Western steps	72
Educational television a myth, doctor warns	75
At Harvard, a Proposal to Publish Free on Web	77
One Of Youngest And Brightest Galaxies Ever Seen	79
'Junk DNA' Can Explain Origin And Complexity Of Vertebrates, Study Suggests	81
Lake Mead, Key Water Source For Southwestern US, Could Be Dry By 2021	83
Continental Slope Off Alaska 100 Nautical Miles Further Off Coast Than Assumed	85
Global Warming: Sea Level Rise Could Be Twice As High As Current Projections, Greenland Ice Sheet Study Suggests	87
Human Skin Cells Reprogrammed Into Embryonic Stem Cells	89
Very Young Found To Process Fear Memories In Unique Way	91
New meat-eating dinos identified	93
Nanowires allow 'power dressing'	95
India facing smoking death crisis	98



Probiotics 'protect top athletes'	100
Pupils promised 'quality culture'	102
New Technique Makes Tissues Transparent	105
How A Plant Know To Send Roots Down And Shoots Up: EAR Calls The Shots	107
One Drink Of Red Wine Or Alcohol Is Relaxing To Circulation, But Two Drinks Are Stressful	109
Thousands Of Humans Inhabited New World's Doorstep For 20,000 Years	111
Mechanism Leading To Cleft Palate Discovered	113
Fake Malaria Drugs Made In China: Tracking Down The Threat To Global Health	115
Dramatic Improvement In Aortic Valve Surgery Using Least Invasive Valve Replacement Procedure, Study Shows	117
How Noroviruses Cause Repeated Outbreaks Of 'Stomach Flu'	118
Nanosieves Save Energy In Biofuel Production	119
Surgical Robot Triples Accuracy Of Medical Students Training For Hip Surgery	121
Climate Change Impacting Marine Environment Surrounding UK	123
Protein Found That Helps Nerve Cells Cheat Death Without Unwanted Side Effects	125
High Blood Pressure Worsening In All States For Women; Begins To Stagnate For Men	126
Heart Attacks Decreased After Public Smoking Ban In Italy	128
'Recordable' Proteins As Next-generation Memory Storage Materials	130
Prions Link Cholesterol To Neurodegeneration	131
Power Shirt: Nanotechnology In Clothing Could Harvest Energy From Body Movement	132
Dumb and Dumber: Are Americans Hostile to Knowledge?	134
Genetic Breakthrough Supercharges Immunity To Flu And Other Viruses	137
'Hot' Oxygen Atoms On Titanium Dioxide Motivated By More Than Just Temperature	138
16th century 'Venus' painting deemed too steamy for London commuters	140
Carbon Capture Strategy Could Lead To Emission-free Cars	141
Urban Ecology: Taking Measure Of The Coming Megacity's Impact	143
Why Does Some Work by Lead Pencil Studio Look So Much Like Work by Other Artists?	147
'Molecular Glue' Cohesin Acts As Regulator Of Gene Expression	152
Do Jewish novelists write Jewish novels?	154
Heavy Cell Phone Use Linked To Cancer, Study Suggests	156
Reducing Nutrient Pollution In Feeder Streams: How To Prioritize Restoration Efforts	158
Heat Treatment Process Supplies Stronger Die Cast Parts	160
Ocean Dead-Zones May Be Linked To Global Warming	162
2007 Hurricane Season Starts Early, Ends Late	164
Wireless Monitoring Of People And Things: Future Of Social Networking?	167
New Fish Parasite Species Described	170
Jules Verne ATV Launch Approaching	172
Natural Purple Pigments In Fruits, Vegetables And Berries, Such As Blueberries, May Help Prevent Obesity	174
Antarctic Expedition Provides New Insights Into The Role Of The Southern Ocean For Global Climate	175
Robots could reduce animal tests	177
Warning over illegal skin bleach	179

Organic Solar Cells: Electricity From A Thin Film



The flexible solar module is as small as the page of a book. (Credit: Copyright Fraunhofer ISE)

ScienceDaily (Feb. 10, 2008) — Teams of researchers all over the world are working on the development of organic solar cells. Organic solar cells have good prospects for the future: They can be laid onto thin films, which makes them cheap to produce. Established printing technologies should be employed for their production of the future. In order to achieve this goal of suitable solar cell architecture as well a coating materials and substrates have to be developed. “This method permits a high throughput, so the greatest cost is that of materials,” says Michael Niggemann, a researcher at ISE.

Nevertheless, organic solar cells are not intended to compete with classic silicon cells – they are not nearly efficient enough to do that just yet. Because they are flexible, however, they can open up new fields of application: Plastic solar cells could supply the power for small mobile devices such as MP3 players or electronic ski passes. Another possibility would be to combine solar cells, sensors and electronic circuits on a small strip of plastic to form a self-sufficient power microsystem.

At nano tech in Tokyo, the Fraunhofer experts will be presenting a flexible solar module that is as small as the page of a book. It was produced by a method that can easily be transferred to roll-to-roll technology – a vital step en route to mass production.

A new design principle helps to save costs, too: Until now, the front electrode, the one that faces the sun, has usually been made of expensive indium tin oxide because this material is transparent. But now there is an alternative: The Fraunhofer crew has interconnected a poorly conductive transparent polymer electrode with a highly conductive metal layer on the rear side of the solar cell. This connection is done through numerous tiny holes in the solar cell. This has the advantage that a low-priced material can be used. The idea has already been patented.

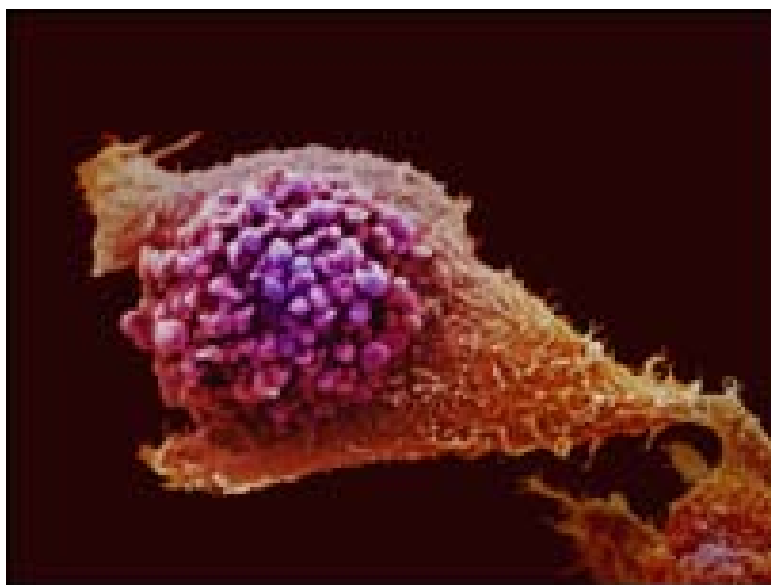
The Fraunhofer Institute for Solar Energy Systems ISE in Freiburg is presenting avenues towards industrial mass production at the world’s largest trade fair for nanotechnology, the nano tech 2008 from February 21 through 23 in Tokyo.

Adapted from materials provided by Fraunhofer-Gesellschaft, via AlphaGalileo.

<http://www.sciencedaily.com:80/releases/2008/02/080206154631.htm>

Prostate cancer screening 'hope'

UK researchers have discovered seven new genes associated with prostate cancer, which could be used to identify high-risk men more accurately.



Some of the genes could also lead to new treatments, the study in Nature Genetics suggests.

A trial is starting later this year to screen for the risk genes in men with a family history of the cancer.

The genes, found through analysis of 10,000 individuals, are present in over half of all prostate cancer cases.

Prostate cancer is the most common cancer in men in the UK.

From a public health point of view, this could be very helpful because it will allow us to target scarce resources to where they are really needed

Dr Ros Eeles

There is currently no routine screening programme in the UK, although men with a family history of the disease can have a prostate specific antigen (PSA) blood test to detect signs of the disease.

But this is notoriously inaccurate and although 10-15% of men will have high enough PSA levels to warrant carrying out a prostate biopsy, only 2-3% will require any treatment.

Genome-wide scan

More than half a million single letter variations in the DNA code were analysed in men in the UK and Australia.

Researchers said the seven genes they found had not previously been linked to prostate cancer.

One of them, MSMB, can be measured in the blood and may be particularly helpful in screening for or monitor progression of the disease.

Another, LMTK2, is a potential target for new treatments, the researchers said.



Within three to four years, it should be possible to offer "genetic profiling" to men to assess their risk of developing the condition, the researchers believe.

It will enable doctors to more accurately decide which men need more regular monitoring or a biopsy.

Dr Ros Eeles, who led the study at the Institute of Cancer Research said: "From a public health point of view, this could be very helpful because it will allow us to target scarce resources to where they are really needed.

She said genetic profiling would definitely happen but researchers were not in a position to offer the test just yet.

"We're doing the trial because we need to see who would come forward for the test, who would benefit, what kind of results do they get on their biopsies and what kind of cancer develops."

Professor Doug Easton, genetic epidemiology expert at the University of Cambridge, who analysed the data said the results would "greatly improve" the understanding of how prostate cancer develops.

He added that most people would have at least one of the genes but it was the combination of a few that would increase a person's risk above the population average.

Targets

Nick James, professor of clinical oncology at the University of Birmingham and consultant in clinical oncology at the Queen Elizabeth Hospital, said it had proved much more difficult to find genes in prostate cancer compared with some other cancers.

He said: "This work provides two useful avenues."

"One is that finding faulty genes gives researchers a chance to look at their products that may be good targets for new treatments.

"Secondly, this discovery may mean that we can target screening for prostate cancer - a process that has been very controversial due to over diagnosis of clinically insignificant cancer - to groups of men that we know to have higher risk of developing the disease."

The research was funded by Cancer Research UK.

Story from BBC NEWS:

<http://news.bbc.co.uk/go/pr/fr/-/1/hi/health/7234922.stm>

Published: 2008/02/10 22:51:22 GMT

'Diet' foods weight gain puzzle

A study which showed that rats fed on artificial sweetener still put on weight has baffled researchers.



Scientists from Purdue University in the US now believe that a sweet taste followed by no calories may make the body crave extra food.

Their research, published in the journal *Behavioral Neuroscience*, found that rats fed sugar subsequently had lower appetites.

But nutritionists say that low-calorie sweeteners are still best for health.

The data clearly indicate that consuming a food sweetened with no-calorie saccharin can lead to greater body-weight gain

Purdue University researchers

Conventional wisdom says that, as part of a calorie controlled diet, artificial sweeteners can help people lose weight or keep it off.

But the Purdue study turns that wisdom on its head.

They gave different yoghurt to different groups of rats, some sweetened with sugar, and some with saccharin.

They were then given a plentiful supply of food, and the researchers observed the results.

The saccharin-fed mice ate more calories, put on more fat, and gained more weight than their sugar-fed counterparts.

They did not make any attempt to cut back on their food later to regulate their weight.

Sweet expectations



The researchers wrote in the journal: "The data clearly indicate that consuming a food sweetened with no-calorie saccharin can lead to greater body-weight gain and adiposity than would consuming the same food sweetened with higher calorie sugar."

One theory, they said, was that, in normal conditions, the arrival of a sweet taste in the mouth helped prime the metabolism for the arrival of a calorie-heavy, sweet meal into the digestive system.

When the meal does not arrive, they said, the body may get confused and have more trouble regulating its appetite when other food is around.

They said that if this were the case, other low-calorie sweeteners such as aspartame, sucralose and acesulfame could have a similar effect.

A spokesman for the British Nutrition Foundation said the study findings were "interesting", but did not prove that artificial sweeteners could be counterproductive in dieting humans.

"This needs far more research - as studies in humans have shown that low-calorie sweeteners can help people lose weight."

Story from BBC NEWS:

<http://news.bbc.co.uk/go/pr/fr/-/1/hi/health/7233459.stm>

Published: 2008/02/11 00:03:29 GMT



Doctors Use Wii Games for Rehab Therapy

By LINDSEY TANNER
AP Medical Writer

CHICAGO (AP) -- Some call it "Wiihabilitation." Nintendo's Wii video game system, whose popularity already extends beyond the teen gaming set, is fast becoming a craze in rehab therapy for patients recovering from strokes, broken bones, surgery and even combat injuries.

The usual stretching and lifting exercises that help the sick or injured regain strength can be painful, repetitive and downright boring.

In fact, many patients say PT - physical therapy's nickname - really stands for "pain and torture," said James Osborn, who oversees rehabilitation services at Herrin Hospital in southern Illinois.

Using the game console's unique, motion-sensitive controller, Wii games require body movements similar to traditional therapy exercises. But patients become so engrossed mentally they're almost oblivious to the rigor, Osborn said.

"In the Wii system, because it's kind of a game format, it does create this kind of inner competitiveness. Even though you may be boxing or playing tennis against some figure on the screen, it's amazing how many of our patients want to beat their opponent," said Osborn of Southern Illinois Healthcare, which includes the hospital in Herrin. The hospital, about 100 miles southeast of St. Louis, bought a Wii system for rehab patients late last year.

"When people can refocus their attention from the tediousness of the physical task, oftentimes they do much better," Osborn said.

Nintendo Co. doesn't market Wii's potential use in physical therapy, but company representative Anka Dolecki said, "We are happy to see that people are finding added benefit in rehabilitation."

The most popular Wii games in rehab involve sports - baseball, bowling, boxing, golf and tennis. Using the same arm swings required by those sports, players wave a wireless controller that directs the actions of animated athletes on the screen.

The Hines Veterans Affairs Hospital west of Chicago recently bought a Wii system for its spinal cord injury unit.

Pfc. Matthew Turpen, 22, paralyzed from the chest down in a car accident last year while stationed in Germany, plays Wii golf and bowling from his wheelchair at Hines. The Des Moines, Iowa, native says the games help beat the monotony of rehab and seem to be doing his body good, too.

"A lot of guys don't have full finger function so it definitely helps being able to work on using your fingers more and figuring out different ways to use your hands" and arms, Turpen said.

At Walter Reed Army Medical Center, the therapy is well-suited to patients injured during combat in Iraq, who tend to be in the 19 to 25 age range - a group that's "very into" playing video games, said Lt. Col. Stephanie Daugherty, Walter Reed's chief of occupational therapy.

"They think it's for entertainment, but we know it's for therapy," she said.

It's useful in occupational therapy, which helps patients relearn daily living skills including brushing teeth, combing hair and fastening clothes, Daugherty said.



WakeMed Health has been using Wii games at its Raleigh, N.C., hospital for patients as young as 9 "all the way up to people in their 80s," said therapist Elizabeth Penny.

"They're getting improved endurance, strength, coordination. I think it's very entertaining for them," Penny said.

"It really helps the body to loosen up so it can do what it's supposed to do," said Billy Perry, 64, a retired Raleigh police officer. He received Wii therapy at WakeMed after suffering a stroke on Christmas Eve.

Perry said he'd seen his grandchildren play Wii games and was excited when a hospital therapist suggested he try it.

He said Wii tennis and boxing helped him regain strength and feeling in his left arm.

"It's enjoyable. I know I'm going to participate with my grandkids more when I go visit them," Perry said.

While there's plenty of anecdotal evidence that Wii games help in rehab, researcher Lars Oddsson wants to put the games to a real test.

Oddsson is director of the Sister Kenny Research Center at Abbott Northwestern Hospital in Minneapolis. The center bought a Wii system last summer and is working with the University of Minnesota to design a study that will measure patients' function "before and after this 'Wiihab,' as someone called it," Oddsson said.

"You can certainly make a case that some form of endurance related to strength and flexibility and balance and cardio would be challenged when you play the Wii," but hard scientific proof is needed to prove it, Oddsson said.

Meantime, Dr. Julio Bonis of Madrid says he has proof that playing Wii games can have physical effects of another kind.

Bonis calls it acute "Wiiitis" - a condition he says he developed last year after spending several hours playing the Wii tennis game.

Bonis described his ailment in a letter to the New England Journal of Medicine - intense pain in his right shoulder that a colleague diagnosed as acute tendonitis, a not uncommon affliction among players of real-life tennis.

Bonis said he recovered after a week of ibuprofen and no Wii, and urged doctors to be aware of Wii overuse.

Still, as a Wii fan, he said in an e-mail that he could imagine more moderate use would be helpful in physical therapy "because of the motivation that the game can provide to the patient."

http://news.wired.com/dynamic/stories/W/WIIHABILITATION_MEDICINE?SITE=WIRE&SECTION=HOME&TEMPLATE=DEFAULT&CTIME=2008-02-09-06-24-37



Pushing Paper Out the Door

By **HANNAH FAIRFIELD**

CHRIS UHLIK'S children can be found in their home computer lab almost every morning. Nicole is writing a story about her two lizards. Tony is playing an interactive spelling game, while Andy is learning multiplication tables. Even 5-year-old Joceline is clicking away at a storybook game.

Mr. Uhlik, an engineering director at [Google](#), and his family live a practically paper-free life. The children are home-schooled on computers. Other sources of household paper — lists, letters, calendars — have become entirely digital.

Going paperless was a conscious decision by the Uhliks. But many families may be closer to entering a paperless world than they realize. Paper-reducing technologies have crept into homes and offices, perhaps more for efficiency than for environmentalism; few people will dispute the convenience of online bill-paying and airline e-tickets.

“Paper is no longer the master copy; the digital version is,” says Brewster Kahle, the founder and director of the Internet Archive, a nonprofit digital library. “Paper has been dealt a complete deathblow. When was the last time you saw a telephone book?”

Some homes may no longer have phone books, but many have scanners — and, increasingly, more than one. Flatbed scanners, which most people use for photographs, offer high resolution but are cumbersome for scanning large volumes of paper. New, cheap document-feed scanners that can digitize a stack of papers, receipts or business cards in seconds are becoming popular. Add multiple computers, digital cameras and maybe an electronic book reader, and suddenly paper seems to be on the endangered-species list.

After rising steadily in the 1980s and '90s, worldwide paper consumption per capita has plateaued in recent years. In the richest countries, consumption fell 6 percent from 2000 to 2005, from 531 to 502 pounds a person. The data bolsters the view of experts like Mr. Kahle who say paper is becoming passé.

Businesses like [Fujitsu](#) and [Hewlett-Packard](#) that focus on transforming print documents into digital data are beginning to exploit a largely untapped market.

A paperless world isn't automatically a boon for the environment, though. While these digital toys reduce dependence on one resource, they increase it on another: energy. Some devices are always plugged in, eating electricity even when not in use, and gobbling huge amounts of power when they are. Others, like digital cameras and laptop computers, use electricity while they are recharging.

And the shift might not happen as fast as some technology gurus predict. The paperless office, which some experts had said would be the norm by the 1990s, has so far failed to materialize. Employees are reckless about printing long e-mail messages, reports and memos, largely because the company picks up the bill for the laser printers, photocopiers, ink and paper.

But at home, where printers are slow, noisy and devour expensive ink cartridges, people are more cautious about hitting the “print” button. What little paper comes into the home — receipts, bills, invitations — can be scanned and then shredded. Filing cabinets can be emptied, the data kept, the paper gone.

“Some people are happy to throw away their past. Not me,” says Brad Templeton, who has founded an Internet newspaper and a software company and is the chairman of the Electronic Frontier Foundation. “I'm a digital pack rat. I have phone bills from 1983 and taxes from the 1990s. But I have everything scanned, so it takes up no physical space. For me, scanners provide the magic of still having all my documents without the clutter.”



Although he would like to scan his entire book collection, Mr. Templeton, who is based in Silicon Valley, instead typically reads e-books when he is delayed at the airport or caught in a line somewhere. “It’s not as pleasant as reading a paper book,” he said. “But the e-book you have is better than the book you don’t.”

Many companies, like H-P, Fujitsu, and Canon, have leapt into the paperless home market with new scanners for personal and home use, which is the fastest-growing sales segment. Worldwide shipments jumped to 623,000 in 2007 from 354,000 in 2005, and sales are expected to top 1.1 million by 2010, according to IDC, a market research company.

Fujitsu introduced a document-fed scanner called the ScanSnap in 2003, expecting to sell it mostly to businesses. But the company quickly realized that there was a huge market for inexpensive, fast household scanners. Its small, portable ScanSnap was introduced in November, at a price of \$295, well below the \$495 price of the larger original.

Worried that you won’t be able to find what you need if it’s digital? That’s generally not a problem. Most scans can immediately be turned into text-searchable documents, so the information is just a few keystrokes away.

Some people prefer to bypass the purchase of a scanner and instead farm out the scanning — to India, where it can be done on the cheap. ScanCafé, which specializes in digitizing and retouching photographs, has an office in the San Francisco Bay Area, but most of its employees are in Bangalore. They will take a shoe box full of prints or a photo album and return the originals with a CD and your own online digital library. They scan paper documents, too, for about 40 cents a page.

Those services are useful for getting rid of accumulated paper, but the trend is not to produce the paper at all. Students and professors at colleges have traditionally used large amounts of paper, but they are moving away from the bulk of it as readings, papers, problem sets and exams are posted online.

Robert Burdock, a student at the University of St. Andrews in Scotland, carries a digital camera to class so he can take a picture of any handout and immediately turn it into a text-searchable document on his laptop.

“Say I’m writing an essay on Edward III. A quick input of the term in Google Desktop and I’m presented with everything I have on the subject,” Mr. Burdock wrote in an e-mail message, which had a note at the bottom asking the recipient to consider the environment before printing. “This is a massive time saver when compared to manual searching and sifting.”

IN the desire for efficiency — to find exactly what you need the moment you need it — paper is being left behind. Mr. Uhlik, who also worked on Google’s Book Search, the book scanning project, has scanned about 100 of his reference books to try to make his home library digital and searchable. Because he wants to keep the house nearly paper-free, most of his remaining 1,000 books are in a shed. He occasionally pays his children to help scan them.

“Once the books are all scanned and backed up on several hard drives, I’ll never have to worry about the shed roof leaking and ruining them,” he says. “I’ve preserved them forever if I put them on the computer.”

<http://www.nytimes.com/2008/02/10/business/10metrics.html?em&ex=1202878800&en=af901b59d732b33d&ei=5087%0A>

U.S. Universities Rush to Set Up Outposts Abroad

By TAMAR LEWIN



At Education City in Doha, Qatar, the largest concentration of American universities abroad, Khalid al-Sooj, left, talks with a Carnegie Mellon classmate.

When John Sexton, the president of New York University, first met Omar Saif Ghobash, an investor trying to entice him to open a branch campus in the United Arab Emirates, Mr. Sexton was not sure what to make of the proposal — so he asked for a \$50 million gift.

“It’s like earnest money: if you’re a \$50 million donor, I’ll take you seriously,” Mr. Sexton said. “It’s a way to test their bona fides.” In the end, the money materialized from the government of Abu Dhabi, one of the seven emirates.

Mr. Sexton has long been committed to building N.Y.U.’s international presence, increasing study-abroad sites, opening programs in Singapore, and exploring new partnerships in France. But the plans for a comprehensive liberal-arts branch campus in the Persian Gulf, set to open in 2010, are in a class by themselves, and Mr. Sexton is already talking about the flow of professors and students he envisions between New York and Abu Dhabi.

The American system of higher education, long the envy of the world, is becoming an important export as more universities take their programs overseas.

In a kind of educational gold rush, American universities are competing to set up outposts in countries with limited higher education opportunities. American universities — not to mention Australian and British ones, which also offer instruction in English, the lingua franca of academia — are starting, or expanding, hundreds of programs and partnerships in booming markets like China, India and Singapore.

And many are now considering full-fledged foreign branch campuses, particularly in the oil-rich Middle East. Already, students in the Persian Gulf state of Qatar can attend an American university without the expense, culture shock or post-9/11 visa problems of traveling to America.

At Education City in Doha, Qatar's capital, they can study medicine at Weill Medical College of Cornell University, international affairs at Georgetown, computer science and business at Carnegie Mellon, fine arts at Virginia Commonwealth, engineering at Texas A&M, and soon, journalism at Northwestern.

In Dubai, another emirate, Michigan State University and Rochester Institute of Technology will offer classes this fall.

"Where universities are heading now is toward becoming global universities," said Howard Rollins, the former director of international programs at Georgia Tech, which has degree programs in France, Singapore, Italy, South Africa and China, and plans for India. "We'll have more and more universities competing internationally for resources, faculty and the best students."

Since the terrorist attacks of Sept. 11, 2001, internationalization has moved high on the agenda at most universities, to prepare students for a globalized world, and to help faculty members stay up-to-date in their disciplines.



A NYIT accounting class in Abu Dhabi has a mix of students from the Gulf and South Asia, reflecting the broad appeal of an American-style education -- and an American degree.

Overseas programs can help American universities raise their profile, build international relationships, attract top research talent who, in turn, may attract grants and produce patents, and gain access to a new pool of tuition-paying students, just as the number of college-age Americans is about to decline.

Even public universities, whose primary mission is to educate in-state students, are trying to establish a global brand in an era of limited state financing.

Partly, it is about prestige. American universities have long worried about their ratings in U.S. News and World Report. These days, they are also mindful of the international rankings published in Britain, by the Times Higher Education Supplement, and in China, by Shanghai Jiao Tong University.



The demand from overseas is huge. At the University of Washington, the administrator in charge of overseas programs said she received about a proposal a week. “It’s almost like spam,” said the official, Susan Jeffords, whose position as vice provost for global affairs was created just two years ago.

Traditionally, top universities built their international presence through study-abroad sites, research partnerships, faculty exchanges and joint degree programs offered with foreign universities. Yale has dozens of research collaborations with Chinese universities. Overseas branches, with the same requirements and degrees as the home campuses, are a newer — and riskier — phenomenon.

“I still think the downside is lower than the upside is high,” said Amy Gutmann, president of the University of Pennsylvania. “The risk is that we couldn’t deliver the same quality education that we do here, and that it would mean diluting our faculty strength at home.”

While universities with overseas branches insist that the education equals what is offered in the United States, much of the faculty is hired locally, on a short-term basis. And certainly overseas branches raise fundamental questions:

Will the programs reflect American values and culture, or the host country’s? Will American taxpayers end up footing part of the bill for overseas students? What happens if relations between the United States and the host country deteriorate? And will foreign branches that spread American know-how hurt American competitiveness?

“A lot of these educators are trying to present themselves as benevolent and altruistic, when in reality, their programs are aimed at making money,” said Representative Dana Rohrabacher, a California Republican who has criticized the rush overseas.

David J. Skorton, the president of Cornell, on the other hand, said the global drive benefited the United States. “Higher education is the most important diplomatic asset we have,” he said. “I believe these programs can actually reduce friction between countries and cultures.”

Tempering Expectations

While the Persian Gulf campus of N.Y.U. is on the horizon, George Mason University is up and running — though not at full speed — in Ras al Khaymah, another one of the emirates.

George Mason, a public university in Fairfax, Va., arrived in the gulf in 2005 with a tiny language program intended to help students achieve college-level English skills and meet the university’s admission standards for the degree programs that were beginning the next year.

George Mason expected to have 200 undergraduates in 2006, and grow from there. But it enrolled nowhere near that many, then or now. It had just 57 degree students — 3 in biology, 27 in business and 27 in engineering — at the start of this academic year, joined by a few more students and programs this semester.

The project, an hour north of Dubai’s skyscrapers and 7,000 miles from Virginia, is still finding its way. “I will freely confess that it’s all been more complicated than I expected,” said Peter Stearns, George Mason’s provost.

The Ras al Khaymah campus has had a succession of deans. Simple tasks like ordering books take months, in part because of government censors. Local licensing, still not complete, has been far more rigorous than expected. And it has not been easy to find interested students with the SAT scores and English skills that George Mason requires for admissions.

“I’m optimistic, but if you look at it as a business, you can only take losses for so long,” said Dr. Abul R. Hasan, the academic dean, who is from the South Dakota School of Mines and Technology. “Our goal is



The University of Washington, a huge research university, has found its foothold in the Gulf with a modest program in Abu Dhabi, offering short training classes only for Emirati citizens. This human-resources class, mostly for women, is part of a job-training class paid for by the government.

to have 2,000 students five years from now. What makes it difficult is that if you’re giving the George Mason degree, you cannot lower your standards.”

Aisha Ravindran, a professor from India with no previous connection to George Mason, teaches students the same communications class required for business majors at the Virginia campus — but in the Arabian desert, it lands differently.

Dr. Ravindran uses the same slides, showing emoticons and lists of nonverbal taboos to spread the American business ideal of diversity and inclusiveness. She emphasizes the need to use language that includes all listeners.

And suddenly, there is an odd mismatch between the American curriculum and the local culture. In a country where homosexual acts are illegal, Dr. Ravindran’s slide show suggests using “partner” or “life partner,” since “husband” or “wife” might exclude some listeners. And in a country where mosques are ubiquitous, the slides counsel students to avoid the word “church” and substitute “place of worship.”

The Ras al Khaymah students include Bangladeshis, Palestinians, Egyptians, Indians, Iraqis, Lebanese, Syrians and more, most from families that can afford the \$5,400-a-semester tuition. But George Mason has attracted few citizens of the emirates.

The students say they love the small classes, diversity and camaraderie. Their dorm feels much like an American fraternity house, without the haze of alcohol. Some praise George Mason’s pedagogy, which they say differs substantially from the rote learning of their high schools.

“At my local school in Abu Dhabi, it was all what the teachers told you, what was in the book,” said Mona Bar Houm, a Palestinian student who grew up in Abu Dhabi. “Here you’re asked to come up with your personal ideas.”

But what matters most, they say, is getting an American degree. “It means something if I go home to Bangladesh with an American degree,” said Abdul Mukit, a business student. “It doesn’t need to be Harvard. It’s good enough to be just an American degree.”

Whether that degree really reflects George Mason is open to question. None of the faculty members came from George Mason, although that is likely to change next year. The money is not from George Mason, either: Ras al Khaymah bears all the costs.

Nonetheless, Sharon Siverts, the vice president in charge of the campus, said: “What’s George Mason is everything we do. The admissions are done at George Mason, by George Mason standards. The degree programs are Mason programs.”



Seeking a Partnership

Three years ago, Mr. Ghobash, the Oxford-educated investor from the United Arab Emirates, heard a presentation by a private company, American Higher Education Inc., trying to broker a partnership between Kuwait and an American university.

Mr. Ghobash, wanting to bring liberal arts to his country, hired the company to submit a proposal for a gulf campus run by a well-regarded American university. American Higher Education officials said they introduced him to N.Y.U. Mr. Ghobash spent hundreds of thousands of dollars on the company’s fees, talked with many N.Y.U. officials and paid for a delegation to visit the emirates before meeting Mr. Sexton, the university president, in June 2005.

Mr. Sexton said he solicited the \$50 million gift to emphasize that he was not interested in a business-model deal and that academic excellence was expensive. Mr. Ghobash declined to be interviewed. But according to American Higher Education officials, \$50 million was more than Mr. Ghobash could handle.



So when the agreement for the Abu Dhabi campus New York University was signed last fall, Mr. Ghobash and the company were out of the picture, and the government of Abu Dhabi — the richest of the emirates — was the partner to build and operate the N.Y.U. campus. The Executive Affairs Authority of Abu Dhabi made the gift in November 2007.

“The crown prince shares our vision of Abu Dhabi becoming an idea capital for the whole region,” Mr. Sexton said. “We’re going to be a global network university. This is central to what N.Y.U. is going to be in the future. There’s a commitment, on both sides, to have both campuses grow together, so that by 2020, both N.Y.U. and N.Y.U.-Abu Dhabi will in the world’s top 10 universities.”

Neither side will put a price tag on the plan. But both emphasize their shared ambition to create an entity central to the intellectual life not just of the Persian Gulf but also of South Asia and the Middle East.

“We totally buy into John’s view of idea capitals,” said Khaldoon al-Mubarak, chairman of the Executive Affairs Authority. “This is not a commercially driven relationship. It’s a commitment to generations to come, to research. We see eye to eye. We see this as a Catholic marriage. It’s forever.”

It is also, for New York University, a chance to grow, given Abu Dhabi’s promise to replace whatever the New York campus loses to the gulf.

“If, say, 10 percent of the physics department goes there, they will pay to expand the physics department here by 10 percent,” Mr. Sexton said. “That’s a wonderful opportunity, and we think our faculty will see it that way and step up.”

Mr. Sexton is leading the way: next fall, even before the campus is built, he plans to teach a course in Abu Dhabi, leaving New York every other Friday evening, getting to Abu Dhabi on Saturday, teaching Sunday and returning to his New York office Monday morning.

“The crown prince loved the idea and said he wanted to take the class,” Mr. Sexton said. “But I said, ‘No, think how that would be for the other students.’ ”

Uncharted Territory

While the gulf’s wealth has drawn many American universities, others dream of China’s enormous population.

In October, the New York Institute of Technology, a private university offering career-oriented training, opened a Nanjing campus in collaboration with Nanjing University of Posts and Telecommunications, and dozens of American universities offer joint or dual degrees through Chinese universities.

Kean University, a public university in New Jersey, had hoped mightily to be the first with a freestanding undergraduate campus in China. Two years ago, Kean announced its agreement to open a branch of the university in Wenzhou in September 2007. Whether the campus will materialize remains to be seen. Kean is still awaiting final approval from China, which prefers programs run through local universities.

“I’m optimistic,” said Dawood Farahi, Kean’s president. “I’m Lewis and Clark, looking for the Northwest Passage.”

In fact, his negotiations have been much like uncharted exploration. “It’s very cumbersome negotiating with the Chinese,” he said. “The deal you struck yesterday is not necessarily good today. The Chinese sign an agreement, and then the next day, you get a fax saying they want an amendment.” Still, he persists, noting, “One out of every five humans on the planet is Chinese.”

Beyond the geopolitical, there are other reasons, pedagogic and economic.



“A lot of our students are internationally illiterate,” Dr. Farahi said. “It would be very good for them to have professors who’ve taught in China, to be able to study in China, and to have more awareness of the rest of the world. And I think I can make a few bucks there.” Under the accord, he said, up to 8 percent of the Wenzhou revenues could be used to support New Jersey.

With state support for public universities a constant challenge, new financing sources are vital, especially for lesser-known universities. “It’s precisely because we’re third tier that I have to find things that jettison us out of our orbit and into something spectacular,” Dr. Farahi said.

Possibilities and Alarms

Most overseas campuses offer only a narrow slice of American higher education, most often programs in business, science, engineering and computers.

Schools of technology have the most cachet. So although the New York Institute of Technology may not be one of America’s leading universities, it is a leading globalizer, with programs in Bahrain, Jordan, Abu Dhabi, Canada, Brazil and China.

“We’re leveraging what we’ve got, which is the New York in our first name and the Technology in our last name,” said Edward Guiliano, the institute’s president. “I believe that in the 21st century, there will be a new class of truly global universities. There isn’t one yet, but we’re as close as anybody.”

Some huge universities get a toehold in the gulf with tiny programs. At a villa in Abu Dhabi, the University of Washington, a research colossus, offers short courses to citizens of the emirates, mostly women, in a government job-training program.

“We’re very eager to have a presence here,” said Marisa Nickle, who runs the program. “In the gulf, it’s not what’s here now, it’s what’s coming. Everybody’s on the way.”

Some lawmakers are wondering how that rush overseas will affect the United States. In July, the House Science and Technology subcommittee on research and science education held a hearing on university globalization.

Mr. Rohrabacher, the California lawmaker, raises alarms. “I’m someone who believes that Americans should watch out for Americans first,” he said. “It’s one thing for universities here to send professors overseas and do exchange programs, which do make sense, but it’s another thing to have us running educational programs overseas.”

The subcommittee chairman, Representative Brian Baird, a Washington Democrat, disagrees. “If the U.S. universities aren’t doing this, someone else likely will,” he said. “I think it’s better that we be invited in than that we be left out.”

Still, he said he worried that the foreign branches could undermine an important American asset — the number of world leaders who were students in the United States.

“I do wonder,” he said, “if we establish many of these campuses overseas, do we lose some of that cross-pollination?”

<http://www.nytimes.com/2008/02/10/education/10global.html?em&ex=1202792400&en=f5a841d0580d7941&ei=5087%0A>



When everyone's an author

The only books students want to read are their own, writes Rosemary Neill | *February 09, 2008*

WHEN Michael Wilding set up the University of Sydney's first creative writing course in the late 1980s, his motives weren't entirely high-minded.

As the emeritus professor and novelist confessed recently in *Review*: "The respectable and the serious were gradually being excised from the university ... (and) I decided to take advantage of the general collapse of tradition. So I proposed a creative writing course."

Wilding also recalled how "the traditional Australian universities were deeply suspicious of creative writing and creative writers in those years". Two decades on, universities across the nation, from traditional sandstone campuses with cashmere-soft lawns to brutalist high-rise towers with a strong vocational bent, are awash with wannabe writers. According to a guide produced by the Australian Association of Writing Programs, in 2006, 33 of the nation's 38 universities offered creative writing courses, with some attracting hundreds of undergraduate and postgraduate students.

At the University of Technology, Sydney last year, 278 undergraduates and 205 postgraduates studied various forms of creative writing. At the University of Melbourne, two first-year, semester-long courses in creative writing attracted a total of 620 enrolments (some students did both courses). Although few comparative figures are available, John Dale, director of the UTS Centre for New Writing, estimates that nationally, writing students may well outnumber those studying traditional literature.

"Creative writing courses are spreading while traditional English literature courses are declining," Dale tells *Review*.

In a recent article, Dale wrote: "Creative writing as an area of study is booming in Australia ... Australian universities now offer more than 70 of these courses. There are numerous mature-age students willing to pay universities \$100-plus an hour to sit in a postgraduate writing class."

The creative writing boom throws up striking paradoxes. It seems students have an insatiable appetite for expressing themselves in print at a time when mainstream publishing opportunities have diminished.

Many of the bigger publishers don't produce as many literary novels as they once did. The vast majority have axed their poetry lists, while the short story is an endangered form.

And while the under-25s are often perceived as a generation of reluctant readers, more interested in the Ten Network's *Big Brother* than in the Orwellian version, unprecedented numbers of them apparently want to be writers. Former creative writing teacher Terri-Anne White, who now runs the University of Western Australia Press, reveals that when she asked her writing undergraduates to bring in a book that meant a lot to them, most brought in works by Colleen McCullough, Bryce Courtenay or other habitues of the bestseller lists.

White didn't judge them for this: "For me, it was much bigger than thinking about anything literary. For me, it was about jumping in at the deep end and thinking about how a sentence might be formed."

Alan Wearne, prize-winning poet and creative writing lecturer, tells *Review* his students don't tend to read the books pages of broadsheet newspapers, as "they have other agendas" (among them, blogging and e-publishing).

Tony Birch, creative writing lecturer at the University of Melbourne, is blunter. "I don't think enough students come to creative writing with a clear sense of what is expected," Birch says. "There is little understanding among undergraduates about how difficult it is to be published. They are very naive about that."



At the start of every semester, Birch presents first-years with statistics about the number of short story submissions sent to literary journals versus the (much smaller) number published. "Their faces drop," he says. "I think they are quite shocked by the reality of the difficulties. I mean, you're dealing with 18-year-olds."

But Birch flatly rejects the claim that some undergraduates take up creative writing because they see it as an easy option, a kind of English lite. He has taught history and finds writing undergraduates are no more or less committed than history undergraduates. He adds that postgraduate writing students are highly committed. (Indeed, most of the writing of publishable quality generated at universities comes from postgrads.)

While creative writing flourishes on campus, academic reservations about the field persist, not to mention double standards. Even Wilding, who helped entrench the sub-discipline, is ambivalent about its amoeba-like growth. Recently, a former colleague teased him: "As the father of creative writing at Sydney University, do you, like the father of the atom bomb, feel remorse?"

"Yes!" he responded, only half in jest. For Wilding, whose novels include the biting satire *Academia Nuts*, believes the proliferation of writing courses within the academy has been "a mixed blessing". He is concerned too much creative writing is taught outside a literary context, along with courses about media, communications or theory.

"The way you become a writer is to read books," insists this former English professor.

Another problem, he argues, is the lack of publishing outlets for creative work produced in our halls of higher learning. "At the moment, we have all these creative writing courses and the Australia Council putting money into mentorships and writers' centres, but there's hardly any money going into supporting publishing. What's the point of encouraging writers if none of the stuff's going to come out?"

He is also critical of how creative writing produced by academics and postgraduates doesn't attract equivalent research credit as traditional academic research such as journal articles or monographs.

Just about every writing academic interviewed for this story feels strongly about this double standard: that universities are keen to vacuum up the fees generated by creative writing courses, but don't take their output seriously. "It's absurd," Wilding says indignantly. "Either you believe in this or you don't."

Birch says that in spite of its pulling power, creative writing is under-resourced at the University of Melbourne. One of his subjects, auto-fictions, is the most popular of dozens offered by the university's school of culture and communication. Yet because of a voluntary redundancy program, writing staff for this year have been reduced by half, from 10 to five, he says. "One of the reasons behind that is that creative writing is not taken seriously enough as a discipline," Birch says wearily. In an article published in late 2006 in *The Australian*, UTS's Dale agreed that "in many Australian universities, creative writing programs have been tolerated because of their cash-cow status and they are still undervalued pedagogically". When he speaks to *Review*, Dale is more circumspect, but confirms that "we are still sort of fighting a battle for creative practice to be recognised".

Certainly, here and overseas, creative writing programs have proved effective incubators for a gifted minority of university graduates who are now household-name writers. Best-selling American novelist Jodi Picoult studied creative writing at Princeton, while Ian McEwan and Kazuo Ishiguro each took postgraduate writing courses in Britain. More than 20 years ago, a baby-faced Tim Winton studied writing under the tutelage of Elizabeth Jolley at Western Australia's Curtin University.

Irish-Australian writer M.J. Hyland, whose novel *Carry Me Down* was short-listed for the 2006 Booker Prize, has completed an MA in creative writing, as has Stefan Laszczuk, who won last year's The Australian/Vogel Literary Award for his manuscript *I Dream of Magda*.



Other emerging Australian novelists who teach or have studied creative writing at university include Chloe Hooper, Christine Balint, Danielle Wood and Sara Knox.

Given its ambiguous status inside academe, and the dearth of publishing opportunities outside it, what is powering this creative writing surge? Dale attributes the extraordinary demand to "the new generation who want to express themselves. Gone are the days when a student sits there passively taking notes. We are not teaching them right and wrong answers in creative writing. We are teaching them to engage and explore for themselves. I think that is far more interesting for a student because it's interactive. A lot of the old-fashioned ways of teaching text seems superfluous to me ... If we weren't doing something right, we wouldn't have so many people coming to us."

Nicholas Jose, the University of Adelaide's inaugural chairman of creative writing, says: "In our society, great value is placed on creativity now in all its forms, and the desire for self-expression is strong." He adds that the creative writing boom is partly a response to the contraction of literary publishing. "Other spaces have to be created," he says simply. Jose agrees, though, that "the question of creative writing for undergraduates is a much debated one". The fact is, he says bluntly, that most creative writing students will become schoolteachers.

One of the more exotic courses offered by the University of Adelaide is a postgraduate certificate in food writing, complete with a field trip to a market or winery. It's a highly specialised program, taking only 15 students. Even so, Jose says this represents a tripling of demand since the course was introduced a year ago.

Do creative writing courses lead students to literature, or prove a distraction from it? It's true that as writing programs have multiplied like coffee-shop franchises, literary studies departments have often struggled to keep up their numbers. Last year, the outgoing professor of Australian literature at the University of Sydney, Elizabeth Webby, estimated that enrolments in Australian literature there had halved since the early '80s. And while creative writing has gone from strength to strength at UTS, it has all but abandoned dedicated literature subjects. However, from this year UTS is to introduce a sub-major in Australian literature for writing students. This reflects Dale's view that writing students "should know the history and context of their literature".

Jose thinks creative writing courses "do lead people to literature but in a self-driven, even opportunistic way". By this he means that writing students seek out literature of relevance to their own writing. Robert Dixon, Webby's successor at Sydney, says it's possible creative writing has claimed some students who would otherwise have studied literature. "But it seems also to have created or addressed a genuinely new market, students who may well not have been drawn to English lit," he says. (Dixon also points out that Sydney is now undertaking "a modest expansion" of its Australian literature line-up, including a new first-year course.)

From next year at the University of Melbourne, for the first time creative writing students won't have to study it in concert with a literature or cultural studies subject, according to Birch.

At the University of Wollongong, literature sits high on the agenda for writing students, says lecturer Wearne. In fact, he reckons "there is more literature than writing in our (creative arts) degree. I believe that you can write too much, but you can never read too much."

Wearne is also a believer in elitism. This year Wollongong will accept only about 35 undergraduates into its bachelor of creative arts course. Before they are accepted, these students must meet a marks threshold, undergo an interview and show a portfolio of work. Told about UTS and Melbourne attracting hundreds of writing students, Wearne exclaims: "They're fools to have so many people doing a boutique subject; an elitist subject. The Mickey Mouse element increases the more students you have."



TERRI-ANNE White couldn't stand the waste. In 2005, the director of the University of Western Australia Press launched a new writing series, sourcing fiction from postgraduate writing programs across Australia. So far, seven fiction and one nonfiction book have been published, including Geraldine Wooller's *The Seamstress*, a novel about an emotionally charged mother-daughter relationship, which has gone into a second printing.

White set up the series because "a lot of novels being produced in universities were not being published by the main publishing names in Australia. It seemed like the most extraordinary waste of resources and creative work. We felt that if this (creative writing) was a boom area in the universities, there should be follow-on."

Like UWA Press, Giramondo Publishing, housed at the University of Western Sydney, is forging links between the academic and literary worlds. It derives much of its fiction list, including Alexis Wright's Miles Franklin Award-winning *Carpentaria*, from its academics and graduates.

White wrote a novel, *Finding Theodore and Brina*, since published, as part of a postgraduate literature course and found the experience helpful: "I had a sounding board, a reader and supervisor who covered a great deal of territory and helped me through. There is something to be said for institutionalising it: you can feel a little lost on your own."

LAST year, the announcement that Martin Amis was to take up his first teaching role as professor of creative writing at Manchester University made international headlines. While Amis's was a particularly high-profile appointment, it's increasingly common for respected novelists to teach writing at university or to undertake creative writing PhDs. Australian authors who have moonlighted as creative writing teachers include Jose, Deborah Robertson, Deborah Adelaide, Jean Bedford, Janette Turner Hospital, Jolley and Glenda Adams. Local writers who have taken up PhDs include John Tranter, Sue Woolfe, Wright and Kate Grenville.

There is a symbiosis at work here: universities derive kudos from their association with authors, while writers are lured on to campus by the offer of rent-defraying scholarships.

Amis, a famously caustic critic, promised he would be gentle with his apprentice writers. He also offered Britain's *The Guardian* newspaper this insight into the writing life: "Well, it is a sort of sedentary, carpet slippers, self-inspecting, nose-picking, arse-scratching kind of job, just you in your study, and there is absolutely no way round that." Now, if that doesn't disabuse starry-eyed undergraduates, what will?

<http://www.theaustralian.news.com.au/story/0,,23163541-16947,00.html>



In Moscow, Norman Foster's Crystal Island is a towering ode to the moneyed class

In ways a Dark Ages throwback, the project may not be as groundbreaking as it looks.

By Christopher Hawthorne
Los Angeles Times Staff Writer

February 10, 2008

MOSCOW'S \$4-billion Crystal Island development won preliminary planning approval during the week between Christmas and New Year's Day, just as Russians were beginning to need a glittering distraction from short, bleak winter days. Eye-popping images of the hugely ambitious project, designed for a site on the Moscow River by the British architect Norman Foster, more than fit the bill.

Essentially a city unto itself, Crystal Island would rank, if completed, as the biggest building in the world, with a total floor area of 27 million square feet, or about four times the size of the Pentagon. Its sharply peaked, tent-like form is designed to hold 900 apartments, 3,000 hotel rooms, an international school for 500 students, a shopping center, offices, a museum and a large sports complex.

Foster, whose 900-person firm has designed a number of expensive mega-projects in recent years, including Beijing's new international airport and a 500-foot-high, climate-controlled dome planned for Kazakhstan, has said that Crystal Island is symbolic of a resurgent, newly confident Russia. He points to its many green-design features, including wind turbines and a massive array of solar panels, which he says will make the building a model of eco-efficiency.

Stripped of that press-conference rhetoric, though, the design itself says something entirely different -- something richly suggestive, in fact, about the kinds of buildings we can expect to see as political and financial leaders in rising authoritarian countries continue to seek out architecture's most recognizable names. As a monument to the petro-wealth sloshing across much of the world, and of the stark gap between rich and poor in post-Soviet Moscow, Crystal Island could be hardly be more perfect.

The design also marks a dramatic change of direction for Foster, and more broadly for the group of globe-trotting celebrity architects of which he is a leading member. If it doesn't signal a return to unfettered historicism in contemporary architecture, it is certainly packed fuller with references to the history of art and architecture than any building by a leading firm in recent memory.

Even the way Foster has chosen to present the project to the press has a sepia-toned quality. In stark contrast to the fluid computer-designed images we've grown used to seeing from top architects, many of the Crystal Island renderings from Foster's office were downright painterly. One hand-drawn diagram of Crystal Island, showing how the sun would trace an arc above the building each day, is strategically old-fashioned enough to look Copernican.

Until now, Foster's work has rarely strayed from the clean lines of high-tech glass-and-steel architecture. The Moscow design -- overseen by Mouzhan Majidi, chief executive of Foster + Partners -- seems to challenge observers to spot the many cues it takes from the architectural past.

Perhaps its most obvious forebear is Vladimir Tatlin's "Monument to the 3rd International," a tilting, ziggurat-like structure the Russian constructivist proposed as a tribute to the Communist revolution. In Crystal Island's sharply tapering silhouette there are also echoes of later tributes to Tatlin's unbuilt tower, notably Dan Flavin's 1964 piece "Monument 1 for V. Tatlin," which consists of seven white fluorescent tubes arranged in a skinny triangular form. Foster's design finds an aesthetic middle ground between Tatlin's tangle of steel beams and Flavin's spare, ethereal composition.

But Tatlin's project, which students of architectural history know practically by heart, was at least nominally dedicated to the idea of a classless society -- an idealistic, utopian project at its core. Crystal Island -- though sections will be open to the public -- is not afraid to advertise its role as a site for Moscow's newly rich to park themselves and their money at a safe and dramatic remove from the rest of the city.



In that sense, the building, set to be completed by 2014, is a throwback to Dark Ages architecture, a place to display wealth and to hoard it at the same time. It is shaped like one of those medieval castles built high on a hill as a defense against marauding outsiders -- except in this case, because its site on a peninsula in southern Moscow is flat, the hill is simply built into the design at the base of the building. If topography provides no natural protection, in other words, the architects are pleased to provide it themselves.

Inviting biblical comparison

THERE are also echoes in Foster's swirling design of the Tower of Babel as imagined by various artists over the centuries -- particularly Gustave Dore in his 1865 engraving "The Confusion of Tongues." The Tower of Babel, so the biblical story goes, was built to reach to the heavens, and the hubris of its vertical ambition quickly got its inhabitants scattered, their single language broken into dozens of tongues. Crystal Island takes the standoff between earth and sky and ratchets it up a notch: Its upper floors taper to a point so sharp that the design seems eager not just to rise into the clouds but to pierce them.

The idea of any Old Testament-style comeuppance seems remote on Crystal Island, to say the least. Who holds the power to rebuke Russia's nouveau riche? The Russian president, Vladimir Putin? He is the building's ultimate patron, if not its patron saint. Yuri Luzhkov, the mayor of Moscow, is said to be a friend and ally of the building's developer, an oil and real estate magnate named Shalva Chigirinsky. Foster is also working with Chigirinsky on Moscow's Russia Tower, which at more than 2,000 feet will be the tallest skyscraper in Europe when it's finished in 2012.

In this case, it's hard to tell if Foster means to tweak his client's ambitions by giving Crystal Island such a medieval, even paranoid cast. But would it matter much, on balance, if he were? That kind of winking irony, which may allow architects working for autocrats and their associates to sleep better at night, will be meaningless to the Russians who live in or visit the building, overwhelmed by the sheer spectacle of the soaring interior spaces.

You could make the same point about many new pieces of architecture, of course, in cities from Las Vegas to Shanghai. But rarely has a high-profile design been quite so straightforward about its desire to give the newly wealthy a protected, luxurious and full-service world unto themselves -- mountain and mountaintop rolled into one.

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<http://www.calendarlive.com/printedition/calendar/cl-ca-crystal10feb10,0,5720330.story>

Tobacco Could Kill One Billion By 2100, WHO Report Warns

Cigarette butts. Unless urgent action is taken, tobacco could kill one billion this century, WHO report warns. (Credit: iStockphoto/James Curtis)

ScienceDaily (Feb. 11, 2008) — WHO has released new data showing that while progress has been made, not a single country fully implements all key tobacco control measures, and outlined an approach that governments can adopt to prevent tens of millions of premature deaths by the middle of this century. Unless urgent action is taken, tobacco could kill one billion this century.

Current status of tobacco-related deaths

- 100 million dead in the 20th century
- Currently 5.4 million deaths every year

Unless urgent action is taken

- By 2030, there will be more than 8 million deaths every year
- By 2030, more than 80% of tobacco deaths will be in developing countries
- One billion estimated deaths during the 21st century



In a new report which presents the first comprehensive analysis of global tobacco use and control efforts, WHO finds that only 5% of the world's population live in countries that fully protect their population with any one of the key measures that reduce smoking rates. The report also reveals that governments around the world collect 500 times more money in tobacco taxes each year than they spend on anti-tobacco efforts. It finds that tobacco taxes, the single most effective strategy, could be significantly increased in nearly all countries, providing a source of sustainable funding to implement and enforce the recommended approach, a package of six policies called MPOWER.

“While efforts to combat tobacco are gaining momentum, virtually every country needs to do more. These six strategies are within the reach of every country, rich or poor and, when combined as a package, they offer us the best chance of reversing this growing epidemic,” said Dr Margaret Chan, Director-General of WHO. Dr Chan launched the WHO Report of the Global Tobacco Epidemic at a news conference with New York Mayor Michael Bloomberg. Bloomberg Philanthropies helped fund the report.

“The report released today is revolutionary,” Mayor Bloomberg said. “For the first time, we have both a rigorous approach to stop the tobacco epidemic and solid data to hold us all accountable. No country fully implements all of the MPOWER policies and 80% of countries don't fully implement even one policy. While tobacco control measures are sometimes controversial, they save lives and governments need to step up and do the right thing.”

The six MPOWER strategies

- Monitor tobacco use and prevention policies
- Protect people from tobacco smoke



- Offer help to quit tobacco use
- Warn about the dangers of tobacco
- Enforce bans on tobacco advertising, promotion and sponsorship
- Raise taxes on tobacco

The report also documents the epidemic's shift to the developing world, where 80% of the more than eight million annual tobacco-related deaths projected by 2030 are expected to occur.

This shift, the report says, results from a global tobacco industry strategy to target young people and adults in the developing world, ensuring that millions of people become fatally addicted every year. The targeting of young women in particular is highlighted as one of the "most ominous potential developments of the epidemic's growth".

The global analysis, compiled by WHO with information provided by 179 Member States, gives governments and other groups a baseline from which to monitor efforts to stop the epidemic in the years ahead. The MPOWER package provides countries with a roadmap to help them meet their commitments to the widely embraced global tobacco treaty known as the WHO Framework Convention on Tobacco Control, which came into force in 2005.

WHO is also working with global partners to scale up the help that can be offered to countries to implement the strategies.

Dr Douglas Bettcher, Director of WHO's Tobacco Free Initiative, said the six MPOWER strategies would create a powerful response to the tobacco epidemic. "This package will create an enabling environment to help current tobacco users quit, protect people from second-hand smoke and prevent young people from taking up the habit," he said.

Other key findings in the report

- Only 5% of the global population is protected by comprehensive national smoke-free legislation and 40% of countries still allow smoking in hospitals and schools;
- Only 5% of the world's population lives in countries with comprehensive national bans on tobacco advertising and promotion;
- Just 15 countries, representing 6% of the global population, mandate pictorial warnings on tobacco packaging;
- Services to treat tobacco dependence are fully available in only nine countries, covering 5% of the world's people;

Tobacco tax revenues are more than 4000 times greater than spending on tobacco control in middle-income countries and more than 9000 times greater in lower-income countries. High-income countries collect about 340 times more money in tobacco taxes than they spend on tobacco control.

PDF of full report: http://www.who.int/entity/tobacco/mpower/mpower_report_full_2008.pdf

Adapted from materials provided by [World Health Organization](#).

<http://www.sciencedaily.com:80/releases/2008/02/080210092031.htm>



New Finding May Help Explain Development Of Preeclampsia

ScienceDaily (Feb. 11, 2008) — In a study of pregnant women, those with pregnancy-induced high blood pressure were found to have higher levels of a peptide that raises blood pressure in the pieces of tissue linking mother and fetus, according to researchers at Wake Forest University Baptist Medical Center. The finding, reported online in the journal *Hypertension*, may help explain how the disorder develops. Preeclampsia, or high blood pressure induced by pregnancy, affects 7 to 10 percent of pregnancies in the United States and is the second-leading cause of maternal mortality. It is the leading cause of pre-term delivery and contributes significantly to stillbirths and death in newborns.

The researchers found that in women with preeclampsia, levels of angiotensin II (Ang II), a hormone that constricts blood vessels and causes blood pressure to rise, was doubled in the chorionic villi, part of the placenta that links mother and fetus and supplies food and oxygen. "This finding may be part of the preeclampsia puzzle," said Lauren Anton, a graduate student who is first author on the research. "Anything that gets us closer to understanding this disease is important because there is no treatment and no cure and women are still delivering babies too early."

The researchers theorize that Ang II may restrict the fetal vessels that lie within the chorionic villi, which not only raises blood pressure, but also lowers oxygen and nutrient flow to the baby and may result in lower birth weight and other complications of preeclampsia. The study involved 21 women with preeclampsia and 25 women without the disorder. After delivery, tissue sections were taken from the center of the placenta for analysis.

Ang II is part of the renin angiotensin system (RAS) that regulates blood pressure. The system has been shown to play an important role in preeclampsia. However, changes in the system also occur in women who don't develop the condition. In normal pregnancies, estrogen causes increased levels of several hormones, including Ang II, in the blood. Despite the increase of Ang II in the blood during pregnancy, most women do not develop preeclampsia. This the first study to demonstrate that all three peptides involved in the RAS are found in the chorionic villi of both normal and preeclamptic women. And, it was the first to show that levels of Ang II are higher in the chorionic villi of women with preeclampsia.

"This implies that local tissues are contributing to the problem," said K. Bridget Brosnihan, Ph.D., senior researcher, who has been studying preeclampsia for 12 years. "The hormone is remarkably elevated in this relatively small tissue, which implies that it has an important role in the development of preeclampsia." The researchers hope that the findings may one day lead to treatment for preeclampsia.

ACE inhibitor drugs are currently used to lower Ang II in non-pregnant women with hypertension, but these drugs cannot be given to pregnant women. The study authors suggest that other therapies aimed at regulating blood pressure might be beneficial if they target the chorionic villi rather than the system as a whole. They are currently working to determine if growth factors that cause the placenta's blood supply to develop may also be regulated by the increase in Ang II.

The study was supported, in part, by the National Institutes of Health and the American Heart Association. It was published in the Go Red issue of *Hypertension* that is dedicated to women's cardiovascular health.

Co-researchers are David Merrill, M.D., Ph.D., Liomar Neves, Ph.D., Kathryn Stovall, B.S., Patricia Gallagher, Ph.D., Debra Diz, Ph.D., Cheryl Moorefield, R.N., Courtney Gruver, R.N., and Carlos Ferrario, M.D., all with Wake Forest.

Adapted from materials provided by Wake Forest University Baptist Medical Center, via EurekAlert!, a service of AAAS.

<http://www.sciencedaily.com/releases/2008/02/080208101806.htm>

Smart Pillbox Beeps And Flashed At Pill Time, And Won't Let You Take Them Twice



Priyanka Kumari and Shashi Pallavi try out the uBox, a 'smart' pillbox that metes out medication at a prescribed rate, at a recent training session in India. (Credit: Photo courtesy / Tenzin Priyadarshi, The Prajnopaya Foundation)

ScienceDaily (Feb. 11, 2008) — In The World is a new column that explores the ways people from MIT are using technology--from the appropriately simple to the cutting edge--to help meet the needs of local people in places around the planet.

Tuberculosis has long been eradicated from the world's industrialized nations but continues to take a terrible toll in a few poor, rural regions of Asia and Africa. Every year, 10 million new cases are diagnosed and two million people die of the disease.

It's not that new treatments are needed--medical science long ago figured out how to cure tuberculosis using a cocktail of antibiotics. The problem is getting the medicine to the people who need it and, most difficult, making sure they follow the six-month regimen of daily doses.

Failure to follow the regimen not only leads to likely death of that patient, but fosters the development of antibiotic-resistant strains of the disease. "The problem is, how do you get people to take this complex regimen," says Manish Bhardwaj, a doctoral student in the Department of Electrical Engineering and Computer Science who works in the Microsystems Technology Laboratories.

After a year of hard work and about eight revisions, Bhardwaj and a team of collaborators think they may have found the answer. It's a high-tech solution in a simple, inexpensive and easy-to-use -package.

The first part of the two-component system is a kind of "smart" pillbox, called the uBox. It has 14 chambers that can each be loaded with several pills, which it dispenses from one chamber per day. To alert the patient that it's time to take the medicine, the box flashes its lights and sounds a buzzer. When the compartment is opened, the uBox records the exact time and prevents double-dosing by refusing to open again until the next treatment is due.

After two weeks, a health care worker reloads the box and digitally records and transmits the information stored in it. Doctors and public health services can then get complete data on compliance, patient by patient, in almost real time, instead of having to wait until the end of the six-month treatment.



"How do you know if pills are getting to the patients or if patients are taking them? Today, there's no good way of doing this," Bhardwaj says. If people fail to take all their pills, "it is possible to do harm by treatment that doesn't have good adherence." Even missing a few pills can lead to the development of resistant strains, which can then be spread by that noncompliant patient. "The people they infect have no chance." Typical treatment trials have compliance rates as low as 50 percent, according to World Health Organization statistics.

"We want to make sure the worker is motivated," Bhardwaj says, and at present there's no way to tell which workers are diligent about making the calls and which ones may skip some of their appointed - visits. Accordingly, the uBox has an additional feature: a receptacle for a tiny key, like a headphone plug, which is carried by the visiting health care worker. At each visit the worker inserts the key, thus recording the fact that the patient really has been visited--another important gauge of compliance.

The second part of the group's new system is a cell phone, called the uPhone. By using special software, health care workers can record a patient's temperature, weight, and answers to a list of questions related to symptoms, which adds to the set of detailed patient data analyzed by doctors monitoring the study.

By looking at patterns of effects, the doctors can tell which field workers are achieving the best adherence rates with their patients and find out just what it is that those people are doing right. They can then be recruited to train additional workers.

Bhardwaj has been working with MIT alumni Goutam Reddy and Sara Cinnamon on the engineering and electronics of the pillbox, doctoral student Bill Thies and alumna Pallavi Kaushik on the uPhone software, and MIT seniors Oliver Venn and Jessica Leon on fundraising and logistics.

Bhardwaj and Thies went to Bihar province this January to begin their first field test of the product, conducting a training session for 22 workers who will, in turn, train the field workers to distribute the pillboxes in the field. In March, they will return to India to begin the first actual field test with 100 of the boxes and 10 cell phones.

If all goes well, a second round of testing, using 1,000 uBoxes, is set to begin. After that, it all depends on the results--and on the ability to raise funds for future deployment. Health officials in India are already keenly interested in this test, and Bhardwaj recently met with a representative of the Bill & Melinda Gates Foundation to discuss possible support.

The Ven. Tenzin Priyadarshi, MIT's Buddhist chaplain, helped to get the project started and says, "I am hopeful that the uBox-uPhone project will revolutionize the way we understand and provide health care in rural areas of the world."

While Bhardwaj is proud of the product his team developed, he is not proprietary about it. "We hope to make the uBox and the uPhone the standard of treatment in Bihar. We worked very hard to make something very simple and elegant," he says. "But we'd be delighted if someone beats us to it and builds a uBox cheaper. We hope other people will copy us."

Adapted from materials provided by Massachusetts Institute Of Technology.

<http://www.sciencedaily.com:80/releases/2008/02/080210130407.htm>



Computer Interaction Gets Some Humanity

ScienceDaily (Feb. 11, 2008) — Human-computer interaction has not improved enormously since Mark Twain's time, when the typewriter was invented. A European research task force hopes to change that by making human-computer interaction, well, 'similar' to the way humans do it.

Mark Twain famously invested, and then lost, a fortune on the first typewriter, in 1874. Since then, human-computer interaction has moved beyond basic key-entry (here, the mouse is the most pervasive development), but the keyboard's legacy lives on. We are still using Qwerty, a layout designed to slow down the typist's speed, because the mechanical keys would jam together if pressed in rapid succession.

SIMILAR, a European task force focused on human-computer interaction (HCI), plans to change all that. And it is not taking half measures, either. SIMILAR is not content to just tweak keyboard layouts. Instead, it is going to throw the entire gamut of modern interface devices – from speech, gestures, vision, haptics and even direct brain connections – at the problem.

Its aim? Inject some humanity into the computer interaction process. The task force wants interaction to evolve from human-to-computer to more like human-to-human interactions.

"We are a network of excellence, so our main goal was to create a viable and sustainable community for HCI research," explains Benoit Michel, manager of the SIMILAR project. "That covers a broad range of areas... human-to-human interaction via a computer, or straightforward human-computer interaction, or one person interacting with many others, supported by a computer, or many people interacting together.

"But it also involves research areas like interface theory, or signal processing, or interface prototyping. HCI covers a lot of research domains, and we aimed to bring these together into one pan-European network."

Mission accomplished

Based on its results, it appears SIMILAR accomplished its mission. The 32 direct partners and eight associated partners were responsible for close to 1000 article publications over the four-year life of the network. Their work also saw 32 books published by consortium members, and dozens of PhDs were awarded or are still underway.

The network developed an open source, rapid prototyping software for interface design, called OpenInterface, which regroups a core program and plug-in technology. It means researchers have a standard, open source programming tool for various interface functions, such as speech recognition, haptics, video and others.

If the researcher is not happy with currently available software, he or she can write a new plug-in to provide the desired functionality. In this way, the capabilities of the OpenInterface software will expand. The network also engaged in standards setting work with the W3C, to establish agreed ways to design and interface programming tools with the UsiXML user interface description language.

SIMILAR set up a foundation that is sustainable beyond the life of the project, which finished work in November 2007. The foundation fosters networking between interface design and signal-processing experts, is responsible for the ongoing development of OpenInterface, and publishes a quarterly newsletter to keep members informed of new developments.

The network also set up a well-regarded annual summer workshop called eNTERFACE, which impressed reviewers. It, too, will continue to run.

Interfaces that spin off...



The project was associated with numerous spin-offs. TACTICS is a tactile mapping system that provides 3D relief maps to help the blind to familiarise themselves with a city or neighbourhood. “It’s like Google maps with Braille, and it is now a commercial start-up and will develop commercial products,” says Michel.

Alterface is another company associated with the project. Though they spun off their research home a little before the network launched, they were closely associated with it. Alterface develops multi-modal interfaces for theme parks.

It is almost impossible to say what new types of interface design will emerge from the vibrant and active research community created by SIMILAR, but it will almost certainly result in advances in almost every area of interface design.

“At the beginning of the network, we brought together specialists in all aspects of interface design, and experts from the world of processing,” notes Michel. “The interface researchers know a lot of theory and have many design ideas, but the signal-processing scientists know how to take those ideas and make them work. Linking these two fields had never happened before. And now Europe has a very active and highly visible and effective interface research community.”

Adapted from materials provided by ICT Results.

<http://www.sciencedaily.com:80/releases/2008/02/080208095158.htm>

Intersex Fish Linked To Population And Agriculture In Potomac River Watershed



Smallmouth bass. Scientists have found new clues as to why so many male smallmouth bass in the Potomac River basin have immature female egg cells in their testes - a form of intersex. (Credit: iStockphoto)

ScienceDaily (Feb. 11, 2008) — For several years, scientists have been working to determine why so many male smallmouth bass in the Potomac River basin have immature female egg cells in their testes - a form of intersex. They are closer to finding an answer.

Research by the U.S. Geological Survey (USGS) shows that a high incidence of intersex occurs in the Potomac watershed at sites where farming is most intense and where human population density is highest. The study also shows the greatest prevalence of this form of intersex, known as testicular oocytes (TO), occurs in the spring, just before and during the spawning season.

"We collected smallmouth bass from the Shenandoah, the South Branch of the Potomac, and out of the basin for comparison," said USGS scientist Vicki Blazer, who led the study. "The fish from the sites with the highest human population density and the most farming had the highest incidences of intersex," said Blazer. "On the Shenandoah, rates of intersex were highest, ranging from 80-100 percent intersex."

Out of the Potomac basin, the most densely populated heavily farmed site had bass with a TO rate of 75 percent, where less habited sites had 14-35 percent of male bass with TO. Sites along the South Branch of the Potomac ranged from 47-77 percent; again the higher percents corresponding with increased farming and human population.

Seasonal comparisons are also striking. In the study, the USGS sampled six sites. At every site sampled, the incidence of male bass with TO was significantly higher during the spring pre-spawn to spawning period, ranging from 69-100 percent, compared to the summer post-spawn period, when it ranged from 25-67 percent.

The reproductive anomalies in the Potomac's smallmouth bass population are not readily apparent on gross examination of an affected fish -- they were discovered by accident. In 2003, scientists investigating



massive fish kills and widespread lesions found many individuals with TO while looking at tissues from the testes of male fish under the microscope.

A prevalence of intersex is not unique to the Potomac basin, nor is it unique to smallmouth bass. It has been documented in other wild fish populations including spot-tail shiners in the St. Lawrence River, white suckers in Colorado, shovelnose sturgeon in the Mississippi, white perch from the Great Lakes, roach fish in the U.K and Denmark, sharp-tooth catfish in South Africa, three-spine stickleback in Germany, and barbel in Italy. It has also been noted in marine and estuarine fishes in Japan, the UK and the Mediterranean.

At many of these places, it has been associated with known or suspected endocrine disrupting compounds in wastewater effluent, which are not removed during standard sewage treatment, and in runoff from farming operations. These compounds can include estrogen from birth control pills and hormone replacements, pesticides and fertilizers used on crops, and hormones from livestock operations.

Scientists are continuing to assess the extent of TO in bass in the Potomac River system. They are examining samples collected at reference sites within and outside of the drainage basin to determine a background prevalence of TO for both smallmouth and largemouth bass, and to identify potential causes. They are also assessing the reproductive and general health of fish at sites with high and low prevalence of TO, and evaluating land use in risk assessment.

The article "Intersex (Testicular Oocytes) in Smallmouth Bass from the Potomac River and Selected Nearby Drainages," is published in the current edition of the Journal of Aquatic Animal Health.

Studies of fish health are part of the USGS Chesapeake Bay studies, which provide integrated science for improved understanding and management of the Bay ecosystem. The report "USGS Circular 1316, "Synthesis of USGS Science for the Chesapeake Bay Ecosystem and Implications for Environmental Management," is soon to be released by USGS.

Adapted from materials provided by US Geological Survey.

<http://www.sciencedaily.com:80/releases/2008/02/080208115302.htm>

History Of Quaternary Volcanism And Lava Dams In Western Grand Canyon

Toroweap Point in Grand Canyon national park. (Credit: iStockphoto/Natalia Bratslavsky)

ScienceDaily (Feb. 11, 2008) — John Wesley Powell wrote in 1895: “...what a conflict of water and fire there must have been [in western Grand Canyon]! Just imagine a river of molten rock running down over a river of melted snow.”

Over 110 years later, a synthesis of new and existing dates on these lava flows shows that many are significantly younger than initially thought and all are less than 725 thousand years old. The geochronology data indicates four major episodes when lava flows either erupted into the canyon or flowed over the rim into it: 725-475 thousand years ago (ka), 400-275 ka, 225-150 ka, and 150-75 ka.

These flows formed lava dams in western Grand Canyon that had dramatic impact on the Colorado River.

This paper* presents light detection and ranging (lidar) data to establish the elevations of the tops and bottoms of basalt flow remnants along the river corridor. These data show the original extent of now-dissected intra-canyon flows and aid in correlation of flow remnants.



From 725 to 475 ka, volcanism built a high edifice within Grand Canyon in the area of the Toroweap fault, with dike-cored cinder cones on both rims and within the canyon itself. These large-volume eruptions helped drive the far-traveled basalt flows which flowed down-canyon over 120 km. A second episode of volcanism, from 400 to 275 ka, built a 215-m-high dam along the Hurricane fault, about 15 km downstream.

The ca. 200 and 100 ka flows (previously mapped as Gray Ledge) were smaller flows and lava cascades that entered the canyon from the north rim between the Toroweap and Hurricane faults.

The combined results suggest a new model for the spatial and temporal distribution of volcanism in Grand Canyon in which composite lava dams and edifices were generally leaky in proximal areas.

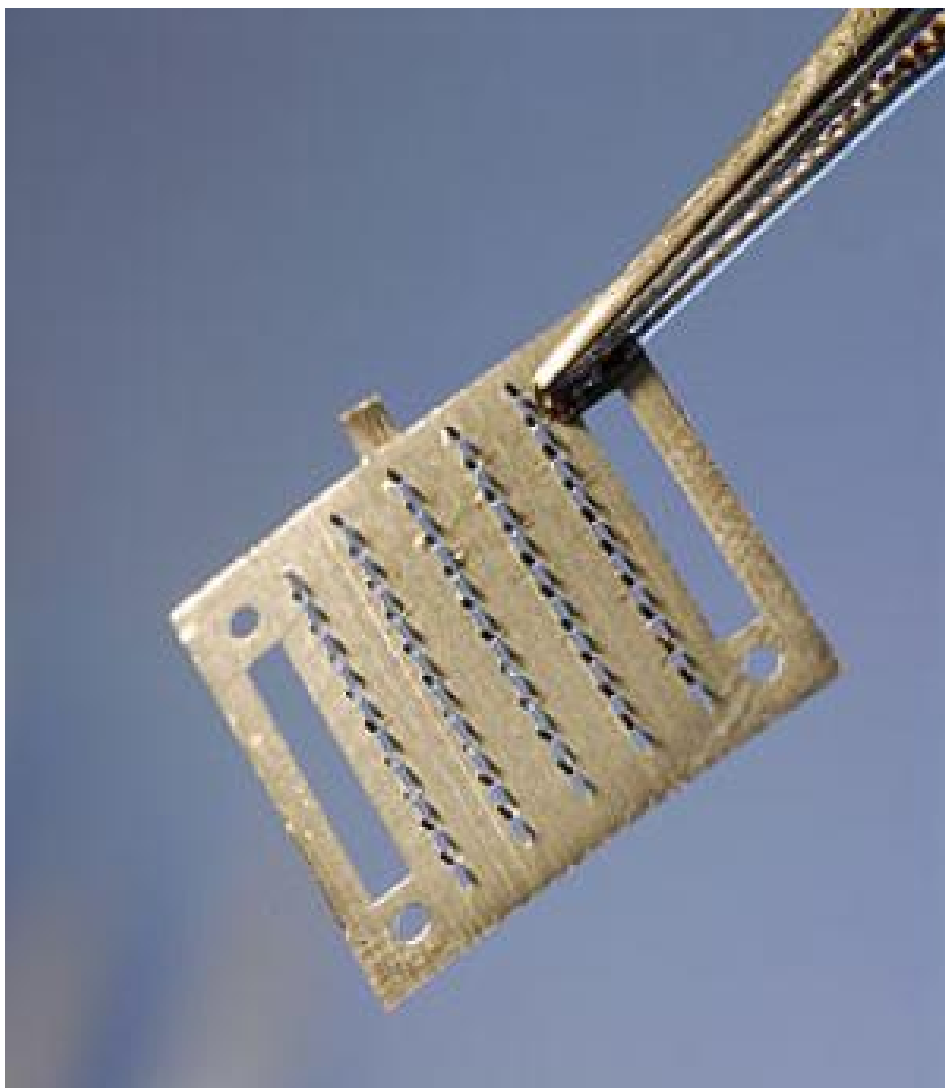
Available data suggest that the demise of volcanic edifices may have involved either large outburst-flood events or normal fluvial deposition at times when the river was established on top of basalt flows. These data highlight complex interactions of volcanism and fluvial processes in this classic locality.

This research, authored by Ryan Crow (University of New Mexico) et al. was published in the February issue of *Geosphere*, published by the Geological Society of America.

Adapted from materials provided by [Geological Society of America](http://www.geologicalsocietyofamerica.org).

<http://www.sciencedaily.com:80/releases/2008/02/080205100014.htm>

Microneedles Enhance Drug Administration Through Skin



Microscopic needle transdermal patch. (Credit: Image courtesy of University of Kentucky)

ScienceDaily (Feb. 10, 2008) — In what is believed to be the first peer-reviewed study of its kind involving human subjects, researchers at the University of Kentucky College of Pharmacy and the Georgia Institute of Technology have demonstrated that patches coated on one side with microscopic needles can facilitate transdermal delivery of clinically-relevant doses of a drug that normally cannot pass through the skin.

Reported in the journal *Proceedings of the National Academy of Sciences*, the study could help advance the use of microneedles as a painless method for delivering drugs, proteins, DNA and vaccines into the body. The research also found other advantages for the microneedles, including an ability to produce therapeutic drug levels with lower doses, and lowered production of metabolites that may cause side-effects.

"This proof-of-concept study shows that microneedles work in humans for transdermal drug delivery," said Daniel Wermeling, associate professor in the Department of Pharmacy Practice and Science at UK's College of Pharmacy. "Success with microneedles could cause us to rethink the convergence of the drug and delivery system and lead to a more integrated approach merging engineering with pharmaceutical technology."

"This study represents an important landmark in the development of microneedles into drug delivery devices suitable for use in clinical medicine," said Mark Prausnitz, a professor in the School of Chemical and Biomolecular Engineering at the Georgia Institute of Technology. "This method may be useful for a broad range of drugs that cannot normally be delivered without a hypodermic needle."

Transdermal drug delivery has proven successful in a number of applications, including pain management, congestive heart failure and hormone replacement. Transdermal administration offers advantages over other delivery techniques, but existing systems can only be used for a narrow range of compounds that easily pass through the skin.

By painlessly punching a series of microscopic holes in the outer layer of skin known as the stratum corneum, microneedles promise to expand the range of drugs and vaccines that can be delivered transdermally. Until this study, however, the only published research demonstrating drug delivery using microneedles had involved studies in animals and on human cadaver skin.

Working with Prausnitz and his Georgia Tech research team, Wermeling and colleagues Stan Banks, a graduate student in the UK College of Pharmacy Department of Pharmaceutical Sciences, David Hudson, fellow in the UK College of Medicine's Department of Psychiatry, and Audra Stinchcomb, associate professor in the UK Department of Pharmaceutical Sciences and co-author of the paper, set out to determine whether microneedle patches could indeed help deliver useful amounts of drug compounds that otherwise couldn't pass through the skin. As a test compound, they chose the drug naltrexone, a skin-impermeable compound that is used to treat opiate and alcohol addiction.

Working with a small group of non-addicted human test subjects, they first prepared a section of skin on each subject's arm by pressing and removing thumb-sized patches that contained 50 stainless steel microneedles each about 620 microns -- about 1/40th of an inch -- in length. Next, gel containing naltrexone was applied to the prepared area, which was then covered by a protective dressing.

The concentration of the drug in each subjects' bloodstream was monitored for 72 hours. The researchers quickly saw levels of the drug reach pharmacologically active concentrations, and those levels remained steady for at least 48 hours in the six test subjects.

Control subjects were treated in the same way, but without the microneedle preparation prior to application of the naltrexone gel. None of the control subjects had detectable levels of the drug in their bloodstream.

As part of the study, electrical resistance testing of the skin was done on separate subjects to determine how long the pores created by the microneedles remained open. Those tests suggested the drug could pass through treated skin for at least 48 hours before natural healing processes closed up the tiny punctures.

Beyond maintaining a steady level of the naltrexone, microneedle delivery may offer another advantage over oral administration: a reduction in the presence of compounds metabolized from the drug. The primary metabolite, known as naltrexol, is rapidly produced by the liver and intestines when the drug is administered orally, creating blood levels as much as ten times that of the parent drug -- which can cause undesirable side effects. With microneedle administration, however, the levels of naltrexol stayed well below those of the naltrexone.

"During the first week of treatment using oral naltrexone, 10 to 20 percent of patients drop out of treatment because of side effects," Wermeling said. "If you can change the way the parent drug is presented in a way that affects how the metabolites are formed, you could improve the safety or side effects of the drug."

Microneedle administration also reduced the amount of drug required to produce therapeutic levels, replacing a 50 milligram tablet with 10-12 milligrams of drug in the gel. Use of the microneedles also produced steady bloodstream levels of the drug, without the initial peak that occurs with oral delivery.



The study represents a first step in demonstrating the broad range of potential uses for microneedles, said Prausnitz, who has been developing the devices for more than ten years. In addition to Prausnitz, the Georgia Tech research team also included Harvinder Gill and Jyoti Gupta.

"There are a number of ways in which microneedles can be used," Prausnitz noted. "This study addressed the simplest use of microneedles in which the needles are just inserted and removed from the skin and a drug patch applied. To understand how broadly microneedles can be used in medicine, we will also need to study delivery of other therapeutics, such as lidocaine, insulin and flu vaccine."

The study has special significance for researcher and co-author Stan Banks. The work is the capstone of his thesis, and represents four years of preclinical studies with naltrexone and delivery systems under an NIH grant to Stinchcomb.

The research was supported by the National Institutes of Health and the University of Kentucky Research Foundation.

Adapted from materials provided by University of Kentucky.

<http://www.sciencedaily.com:80/releases/2008/02/080204172210.htm>



Want Healthy Gums? Hit The Dairy Aisle

ScienceDaily (Feb. 10, 2008) — Consumers have long known that including dairy in their diets can help maintain healthy bones and even help promote weight loss. However, a recent study published in the January issue of the *Journal of Periodontology*, the official publication of the American Academy of Periodontology (AAP), demonstrated that routine intake of dairy products may also help promote periodontal health. The study analyzed the periodontal health of 942 subjects and determined that those who regularly consumed dairy products such as milk, cheese and yogurt had a lower instance of gum disease.

“Research has suggested that periodontal disease may affect overall systemic health,” said study author Dr. Yoshihiro Shimazaki of Kyushu University in Fukuoka, Japan. “This study reinforces what much of the public already knows – the importance of dairy in helping achieve a healthy lifestyle, including a healthy mouth.”

Study participants aged 40 through 79 were examined on two periodontal parameters that can indicate gum disease, periodontal pocket depth (PD) and clinical attachment loss (CAL) of gum tissue. Researchers observed that subjects that consumed 55 or more grams of products containing lactic acid each day had a significantly lower prevalence of deep PD and severe CAL, therefore demonstrating a lower instance of periodontal disease.

Periodontal, or gum, disease is a chronic bacterial infection that affects the gums and bone supporting the teeth. Periodontal disease is a major cause of tooth loss in adults and has been connected to the development of heart disease and increased risk of stroke, and can contribute to complications from diabetes, respiratory disease or osteoporosis.

“Millions of adults already suffer from periodontal disease,” says Dr. Susan Karabin, DDS, President of the AAP. “By regularly consuming dairy products such as cheese and milk, something many people do each day, the risk of developing gum disease may decrease. These findings are important since maintaining healthy gums is a critical component to maintaining a healthy body.”

Journal abstract is available at: <http://www.joponline.org/doi/abs/10.1902/jop.2008.070202>

Adapted from materials provided by [American Academy of Periodontology](#).

<http://www.sciencedaily.com:80/releases/2008/02/080206150659.htm>

Dust Storms In Sahara Desert Trigger Huge Plankton Blooms In Eastern Atlantic

MODIS satellite true color image of dust storm over tropical North Atlantic Ocean, March 2004. (Credit: Image courtesy of National Oceanography Centre, Southampton)

ScienceDaily (Feb. 10, 2008) — Scientists on board RRS Discovery are at sea studying the Saharan dust that blows off the coast of Africa - triggering huge plankton blooms in the eastern Atlantic.

Saharan dust is rich in nitrogen, iron and phosphorus and acts as a fertilizer on the production of plankton.

Dr Eric Achterberg from NOCS is leading the research cruise and studying the dust's effect on nutrients, plankton production and the food chain.

The quantity of dust involved, about 500 million tonnes per year, is sufficient to affect the climate. By partly absorbing and partly reflecting sunlight, the dust particles heat the air but cool the ocean surface. They also encourage cloud formation, which reinforces the reflection of light back into space.

Such effects can be far-reaching: hurricanes in the Caribbean begin their life off north west Africa, with atmospheric dust being one of many factors influencing their early development. Wind-blown dust from the Sahara desert plays a crucial role in fertilizing large areas of the Atlantic Ocean.

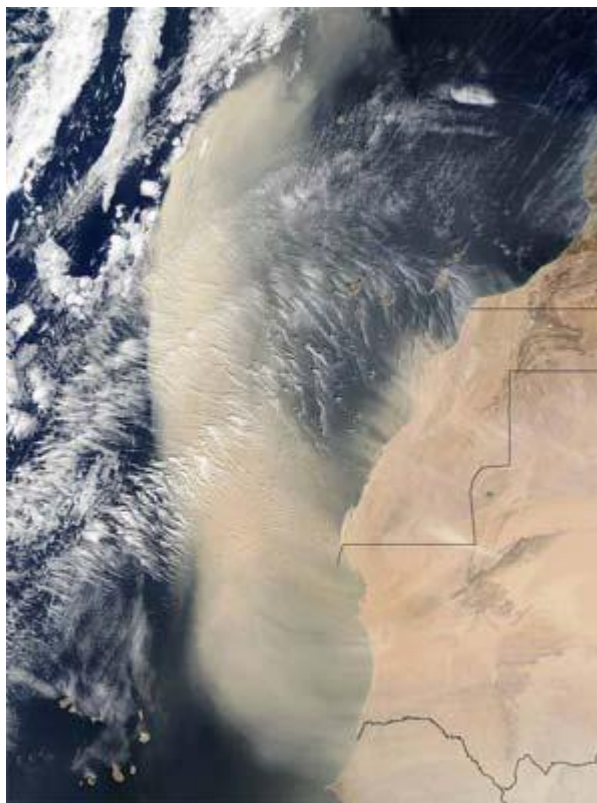
The delivery of nutrients, and some metals common on land but scarce in the open ocean, stimulates the production of massive plankton blooms.

'Dust storms are sporadic events,' said Eric Achterberg. 'And Saharan dust can come from many sources – it can be mixed with soot, from grassland and forest fires; and it can change its chemical and physical properties as it is carried in the atmosphere, at different heights and different moisture conditions. These complications make it difficult to include the dust effects in climate models.'

The research is part of the Surface Ocean Lower Atmosphere Study, UK SOLAS, funded by the Natural Environment Research Council, NERC.

Adapted from materials provided by [National Oceanography Centre, University of Southampton](http://www.noc.ac.uk)

<http://www.sciencedaily.com:80/releases/2008/02/080206192436.htm>



Irregular Exercise Pattern May Add Pounds



A new study should prompt people to think twice before taking a break from their exercise regimens, despite the pressures of family and work obligations, or waning motivation. Weight gained during an exercise hiatus can be tough to shed when exercise is resumed at a later date. (Credit: iStockphoto)

ScienceDaily (Feb. 9, 2008) — The consequences of quitting exercise may be greater than previously thought, according to a new study from the U.S. Department of Energy's Lawrence Berkeley National Laboratory that determined that the weight gained during an exercise hiatus can be tough to shed when exercise is resumed at a later date.

The study, conducted by Paul Williams of Berkeley Lab's Life Sciences Division, found that the key to staying trim is to remain active year-round, year-after-year, and to avoid seasonal and irregular exercise patterns. Most of all, don't quit. Failure to do so may be a contributing factor in the nation's obesity epidemic.

"The price to pay for quitting exercise is higher than expected, and this price may be an important factor in the obesity epidemic affecting Americans," says Williams, whose study is published in the journal *Medicine & Science in Sports and Exercise*.

The study should prompt people to think twice before taking a break from their exercise regimens, despite the pressures of family and work obligations, or waning motivation.

Using data collected from the National Runners' Health Study, Williams found that the impacts of increasing and decreasing vigorous exercise aren't the same among all runners. At distances above 20 miles per week in men and 10 miles per week in women, the pounds gained by running less were about the same as the pounds lost by running more. At these exercise levels, the effects of training and quitting training are comparable, and the weight gains and losses associated with changes in exercise levels are probably reversible.

However, Williams found that people who didn't run as many miles per week face an uphill battle if they want to lose the pounds accumulated during an exercise hiatus. At these less intense levels, an interruption in exercise produces weight gain that is not lost by simply resuming the same exercise regimen.



“At lower mileages, there is asymmetric weight gain and loss from increasing and decreasing exercise, leading to an expected weight gain from an exercise hiatus,” says Williams. “In other words, if you stop exercising, you don’t get to resume where you left off if you want to lose weight.”

Specifically, Williams compared 17,280 men and 5,970 women who decreased their running distance with 4,632 men and 1,953 women who increased their running distance over a 7.7-year period. He found that runners who decreased their distance from five to zero miles per week gained four times as much weight as those who decreased their distance from 25 to 20 miles per week. He also found that people who started running after an exercise layoff didn’t lose weight until their mileage exceeded 20 miles per week in men, and 10 miles per week in women.

Williams says his findings suggest that an effective public health policy for preventing weight gain may need to include a strategy to keep physically active people active. His study also underscores the importance of avoiding start-stop exercise patterns. Exercise designed to prevent obesity may fall short of its benefits if the exercise is irregular, seasonal, or often interrupted.

“We are getting fat because we don’t exercise sufficiently and consistently. The real solution to the obesity epidemic is getting people to exercise before they think they need it, and to stick with it,” says Williams. “The ounce of prevention is indeed worth a pound of cure.”

A study by Williams published in the same journal in August, 2007, revealed that middle-age weight gain is reduced by one-half in runners who ran 30 or more miles per week, compared to runners who ran less than 15 miles per week. These results, in conjunction with this more recent study, suggest a new way of tackling the obesity problem.

“Many scientists attribute the obesity epidemic to excess calories rather than exercise, because dieting has been shown to produce more weight loss than exercise,” says Williams. “My findings suggest that calorie intake and body weight may be self regulating in active individuals.”

The study, "Asymmetric Weight Gain and Loss From Increasing and Decreasing Exercise" is published in the February 2008 issue of the journal *Medicine & Science in Sports and Exercise*. It was supported in part by grants from the National Heart Lung and Blood Institute.

Adapted from materials provided by [DOE/Lawrence Berkeley National Laboratory](#).

<http://www.sciencedaily.com:80/releases/2008/02/080204094505.htm>

Hearing The Sound Of Quantum Drums



Quantum shape shifting. Molecular nanostructures of different shape (top and bottom surfaces), linked topologically (beam) to share the same spectrum, enable the measurement of quantum mechanical phase. Background: color-encoded quantum state transplanted matrix. (Credit: Manoharan lab, Stanford University)

ScienceDaily (Feb. 9, 2008) — Forty years ago, mathematician Mark Kac asked the theoretical question, "Can one hear the shape of a drum?"

If drums of different shapes always produce their own unique sound spectrum, then it should be possible to identify the shape of a specific drum merely by studying its spectrum, thus "hearing" the drum's shape (a procedure analogous to spectroscopy, the way scientists detect the composition of a faraway star by studying its light spectrum).

But what if two drums of different shapes could emit exactly the same sound? If so, it would be impossible to work backward from the spectrum and uniquely surmise the physical structure of the drum, because there would be more than one correct answer to the question.

It took until the 1990s for mathematicians to prove that, in fact, two drums of different shapes could produce the same sound. In other words, you can't hear the shape of a drum. That outcome, which was physically verified in one instance with vibrations on the surface of soap bubbles, raised theoretical questions about spectroscopy.

"This revolutionized our conception of the fundamental connections between shape and sound, but also had profound implications for spectroscopy in general, because it introduced an ambiguity," according to Stanford physicist Hari Manoharan.

For Manoharan, the next step in studying this conundrum was to take the drum question to another level—a much lower level. He and his students investigated the drum question in the quantum realm, where it could have an effect on real nano-electronic systems.



Using a tunneling scanning microscope and two roomfuls of equipment to move around individual carbon monoxide molecules on a copper surface, they built tiny walls only one-molecule high and shaped them into nine-sided enclosures that could resonate like drums (because of the quantum wave/particle duality of the electrons within the enclosure).

Manoharan calls these enclosures quantum drums. Each drum has only 30 or so electrons inside. They are walled in by roughly 100 carbon monoxide molecules.

The result? Just as in the normal world, two nanostructures with different shapes can resonate in the same way, a phenomenon known as isospectrality. Manoharan, along with his graduate student Chris Moon and others, published their result in the Feb 8 edition of the journal *Science*. To reinforce the point, they created a video, complete with two quantum drums beating with the same sound. (The real "sound" is at ultra-high frequencies in the terahertz range; in the video, the sound has been converted to the range of human hearing.) The practical value of having two different nanostructures with identical properties may lie in the design of ever-smaller computer chip circuits, Manoharan said. Designers of nano-electronic circuits will have two ways to get the same result. "Now your design palette is twice as big," he said.

While the chip industry attempts to shrink existing circuitry, Manoharan is literally coming from the opposite direction. "My research asks, what if you start at the bottom of the ladder? We assemble structures one atom at a time," he said. The unexplored gap between bottom-up research and the industry's shrink-down effort "is where the excitement is," he said.

The work has a natural connection to the problems of quantum computing, he said.

The research may also have connections to string theory, used by cosmologists attempting to understand the structure of the universe, Manoharan said: "There is somehow embedded into the topology of our universe this bizarre spectral ambiguity." String theories describe complex surfaces that are higher-dimensional analogues of these two-dimensional quantum drums.

The drum research has another finding important to the world of quantum mechanics. While it is impossible to directly observe the quantum phase of the wave functions of the electrons inside the drum structure, Manoharan's team has devised a way to extract that information by taking measurements from two isospectral drums and then mathematically combining the information, a process called quantum transplantation. "We discovered that this extra degree of freedom in geometry provides us with a method to 'cheat' quantum mechanics and obtain normally obscured quantum-mechanical phase information," Manoharan said. There are other ways to experimentally determine quantum phase information from atoms or molecules in gases, or from quantum dots and rings, all of them relying on a process called interferometry. The addition of a new method, "geometry over interferometry," will benefit researchers, Manoharan said.

Here the sound of the quantum drums at: <http://www.stanford.edu/group/mota/qin/Movie%20S1%20-%20Isospectrality.mov>

The authors of the *Science* paper, "Quantum Phase Extraction in Isospectral Electronic Nanostructures," in addition to Manoharan and Moon, are graduate students Laila Mattos, Brian Foster, Gabriel Zeltzer and Wonhee Ko.

Funding for the research came from the National Science Foundation, the U.S. Department of Energy and the Office of Naval Research.

Adapted from materials provided by [Stanford University](http://www.stanford.edu).

<http://www.sciencedaily.com:80/releases/2008/02/080208080532.htm>

Flying reptiles came in miniature

A new fossil species of flying reptile with a wingspan of less than 30cm (1ft) has been discovered in China.



The nearly complete articulated skeleton was unearthed in fossil beds from north-eastern China. The 120-million-year-old reptile had not reached adulthood when it died, but neither was it a hatchling.

Study of the fossil suggests it is one of the smallest pterosaurs known, a team says in the journal *Proceedings of the National Academy of Sciences*. The new species has been named *Nemicolopterus crypticus*, which means "hidden flying forest dweller".

The researchers from Brazil and China say the toothless, sparrow-sized specimen contains several unique anatomical features that distinguish it from other pterosaurs (ancient flying reptiles). For example, some of the foot bones are curved in a way not seen in other members of this reptile group. This, say the authors, indicates the pint-sized creature spent much of its time living in the trees.

"It is very likely that this pterosaur represents a lineage of arboreal creatures that lived and foraged for insects in the gymnosperm forest canopy of north-east China during the Early Cretaceous," the researchers write in *PNAS*. They add that its life among the ginkgo forests of China marks this species as a rarity among pterosaur species. "The fundamental importance of this discovery is that it opens a new chapter in the history of evolution of flying reptiles," said co-author Alexander Kellner of Rio de Janeiro Federal University's National Museum.

"Until now, it was unknown that some of these animals had these adaptations to live on tree canopies." Matthew Carrano, a palaeontologist at the Smithsonian Institution in Washington DC said some smaller specimens had been found, but those were clearly younger than this animal. "It is interesting to see some clear arboreal adaptations in this species," said Dr Carrano, who was not on the research team.

"It confirms a suspicion we had, that pterosaurs were more diverse in their habitats than we knew from the [fossil] record." Pterosaurs lived alongside the dinosaurs, from 228 million years ago to 65 million years ago. They were the first vertebrates to evolve winged flight.

One pterosaur known as *Quetzalcoatlus* was enormous, sporting a wingspan of up to 11m (36ft), placing it among the largest flying animals ever.

Story from BBC NEWS:

<http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/7239862.stm>

Published: 2008/02/11 21:15:40 GMT



Is Virtual Destruction an Art Form?

Clive Thompson 02.11.08 | 12:00 AM

I plowed into the intersection at about 140 miles an hour and *boom* -- slammed headfirst into an oncoming four-door sedan. Ouch.

And: *Wow*. The scene immediately shifted into John Woo-style slow motion. The cars reared upward, groaning, like two fighting antelopes; my hood crumpled into an origami flower, the metal bending like tin foil. The windshield became a fistful of glittering ice, hurled into the air. A tire pirouetted away like an escaping planet.

Let me tell you: It was beautiful.

Heart-stoppingly beautiful.

As you might suspect, I was playing *Burnout Paradise*, the latest installation in the best-selling car-racing series. I've always loved the games, because they perform a neat form of ludological jujitsu. It takes crashing -- something that is in racing games normally regarded as bad -- and makes it fun. Indeed, sometimes it's the whole point of the play, as with *Paradise's* ShowTime mode, where you compete to chain as many collisions as you can into a Niagaran cascade of carnage.

The designers at Criterion -- the company that makes *Burnout* -- understand a part of gamer psychology that is rarely discussed, but incredibly important: We are thrilled by wanton destruction. We *need* it like a form of food. We know that spectacles of mayhem inside games are electrically fun, artistically rich and possibly even good for the soul. I call it "physics porn." These days, people talk about the ability of games to let us play with various real-life what-ifs: the ability to try on a new identity, to retool Sim societies, to live through an epic narrative or to tackle "serious" issues like climate change. All true. But for my money, what makes games unique among all other forms of entertainment is that they allow us to experiment with insanely dangerous physics. Games are only arena of modern life in which otherwise responsible adults are permitted to smash expensive things all to hell, purely for the sheer joy of it.

And there are deep, rare aesthetic delights here. Criterion's attention to detail is positively sculptural. It lavishes an artistic level of attention on the behavior of stressed-out metal and rubber. Front-end a highway divider and you can see the shockwave of force crawling across your car like ivy growing along a wall. T-bone a car and you'll barrel roll through the air like a three-ton ballet dancer, tossing off bits of metal that crinkle and bounce. And the sounds! The shrieking of the tires, the hissing of metal ripped like paper, the dull explosive *whumps* of SUVs driving straight into a wall: These are wonderful things to play with. As with most *Burnout* games, I found myself looking forward to the moments when I'd screw up -- just so I could marvel anew at the carnival of pain.

You could argue that this is all pretty adolescent stuff. But the truth is that art has always lingered over scenes of devastation (most particularly war). W.H. Auden once warned that poets make lousy politicians, because they're way too entranced by apocalyptic spectacle. I think he was right, but the truth is this poetic hunger exists in almost everyone. After a 40-hour week of sitting in a cubicle, shuffling Word documents and being robotically polite, any reasonable human needs some catharsis -- some full-body shock of the illicit. Full-bore destruction in video games serves the need admirably.

(Still, it's true that *Burnout Paradise* would be pretty unsettling if the collisions produced mangled, screaming human bodies. Criterion solved this dilemma by getting rid of the people. Not only are the streets completely empty of any human presence, but the cars themselves are unpiloted -- there's *no one inside them*. It's actually much creepier than any of the collisions, really.)

My main quibble with the *Burnout* games is their soundtracks. It's always energetic post-grunge and rock, which Criterion picks presumably because it thinks the music creates a suitably rebellious mood.

But if we take seriously the artistic side of destruction, I think a far better soundtrack would be classical music or opera -- like Beethoven or Rachmaninoff or Bizet. Artists like that have long been known for exciting crazed, over-the-top passions. (At the first performance of Stravinsky's *The Rite of Spring*, the audience rioted.)

So I turn off the in-game music and put Beethoven's *Fifth Symphony* on my speakers. I get up to full speed, lock the brakes and drift sideways into a busy intersection. It's perfect.

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Clive Thompson is a contributing writer for The New York Times Magazine and a regular contributor to Wired and New York magazines. Look for more of Clive's observations on his blog, [collision detection](#).

http://www.wired.com:80/gaming/gamingreviews/commentary/games/2008/02/gamesfrontiers_0211



A Hamlet ballet worthy of the Dane

Many have tried to turn Shakespeare's Hamlet into a ballet. Has David Nixon finally cracked it?



Donald Hutera

Shakespeare has been neither ill-treated nor ignored by the dance world. With their strong characters and meaty narratives, for centuries his plays have proved a rich source of inspiration for choreographers. Latest to have a go is David Nixon, artistic director of Northern Ballet Theatre, who is about to premiere his Hamlet in the company's home town of Leeds

The drawback for any adapter, of course, is having to drop all that complex and ravishing text. Dance, though, isn't called the universal language for nothing. The magic has worked time and again for ballet adaptations of Romeo and Juliet with the tragic lovers exerting an irresistible pull on choreographers.

Some of the Bard's other blockbusters, however, haven't fared so well - with Hamlet a regular stumbling block. If Macbeth is the problem play, with theatre directors often suffering spectacular losses in the battle to do the text justice, Hamlet is its ballet counterpart.

Although dance incarnations of the Melancholy Dane date back to the 18th century, few have made a lasting impression. How can you possibly measure up to source material that at its angst-ridden core is so internal?

It's surprising, then, just how many times choreographers have had a go. In the mid-1930s the great Russian modernist Bronislava Nijinska danced the title role in her own production of the ballet in Paris. In Robert Helpmann's well-regarded one-act, which had its premiere in London in 1942, a dying Hamlet relives crucial moments of his life. The whole hallucinatory vision lasts a neat 18 minutes.

Some more recent danced Hamlets have been notable mostly for falling short. Kenneth MacMillan's 1988 chamber drama *Sea of Troubles* is commonly deemed a footnote to a great career. The Danish-born but British-based Kim Brandstrup created the intriguing but ultimately unsatisfying *Antic* in 1993. His fellow countryman, Peter Schaufuss, staged a Hamlet at Elsinore that was quite a coup in terms of location, but hardly a world-beating success.

Just last year the British-born Christopher Wheeldon mounted a one-act Hamlet at the Bolshoi Ballet. At least that was his intention. He'd even ordered the thrones and the crowns. But daunted by the task he had set for himself, Wheeldon eventually dropped the idea of a narrative ballet in favour of a far more abstract piece. Entitled *Elsinore*, it earned mixed reviews at best. Even one of contemporary ballet's most gifted young dancemakers could not crack Hamlet.

This decidedly rocky history isn't about to stop the Canadian-born Nixon from trying. His Hamlet is being presented as part of a trilogy of Shakespeare adaptations that will tour the UK until early June after the Leeds opening. The other two works - a heart-rending Romeo and Juliet from 1991, and Nixon's delightful A Midsummer Night's Dream from 2003 - both garnered critical acclaim and Olivier Award nominations.

In a break from rehearsals Nixon tells me: "Many people would say that Hamlet is a brave thing to take on because they're looking at it from the outside in, and putting the play on a pedestal where it belongs. The confusion we get is that we are doing the play itself rather than a work based on the play. It's as if people expect a word-for-word, scene-by-scene translation. That could never be."

Nixon, an affable 49-year-old from Ontario, has wanted to create a Hamlet ballet for years. More than two decades ago he was the lead in Patrice Montagnon's production at the Deutsche Oper Berlin. "Once you dance Hamlet it sort of remains with you. I felt I wanted to take this somewhere. What might I be able to do with it?"

Nixon's purpose is neither to abuse nor abandon Shakespeare, but to use the text as inspiration for a new slant on an old story. His Hamlet is set in a grim Nazi-occupied Paris where Claudius is a fascist collaborator, Hamlet a soldier just released from a PoW camp and Ophelia a mad girl who has the misfortune to be out on the streets after curfew. In dramatic terms the brutal realities of wartime are a step beyond Nixon's previous work for NBT, including a delicately tragic Madame Butterfly, a brooding Wuthering Heights and a frolicsome The Three Musketeers.

He agrees. "I have not done anything as dark or as human as this. Of course some people are going to be romantic about the play. But placing it where we have makes it much less romantic. The rules of what is or is not acceptable, or predictable, have changed."

NBT is one of the most visible and popular classical troupes in the UK. Accessible, name-brand story ballets are its engine. This has sometimes led to accusations of pandering to the masses. In the past the standards of the dancing were also questioned. Nixon has turned that around. Perhaps, he suggests, it's high time that the 38-strong company he has headed since 2001 be regarded as something more than a poor cousin.

"Our place in the overall picture of dance companies isn't fully understood. There isn't an appreciation of just how difficult some of the stuff we're doing is. People shouldn't expect the same type of performance in an opera house that you get with a company like ours, and one that tours many weeks with a much smaller number of dancers. They're a very courageous group with a strong technique. They'll pretty much go for anything in the sense that an actor would."

In creating Hamlet, Nixon and his dancers have undertaken some highly collaborative research, from improvisations in the studio to reading books and watching films ranging from Rome: Open City to Pan's Labyrinth. The aim has been to find the right historical context for the emotional truth of Shakespeare and then translate that into dance. "What we are doing is not verbatim," he says. "We're not saying, 'To be or not to be' with movement."

Instead, he says, "we're asking, 'What is the essence of this boy, and all the people around him? What are they going through?' It's been a very fulfilling and motivational process."

Hamlet, Grand Theatre, Leeds (www.northernballettheatre.co.uk 0844 8482701), Feb 16-23 then touring

http://entertainment.timesonline.co.uk/tol/arts_and_entertainment/stage/dance/article3314693.ece



Low morale devastates art colleges

Britain's creative future is under threat from the admin culture that is wrecking our best schools, claims artist

Vanessa Thorpe, arts and media correspondent

Sunday February 10, 2008

The Observer

The art colleges that gave modern Britain many of its most influential figures - from Antony Gormley to Terence Conran - are riven by low levels of morale that will stop the contemporary art renaissance in its tracks, claims the acclaimed landscape artist Graham Crowley, a former painting tutor at the Royal College of Art.

His views, supported this weekend by art experts and teachers working with undergraduates, are reflected in recent low scores in student satisfaction surveys. 'Once there were about 10 independent and very distinct art schools in London; we've ended up with the educational equivalent of British Leyland,' said Crowley.

Crowley, who says he is speaking for many fearful art lecturers, believes the staffing problem inside some of the most famous colleges threatens the future of the art world and the wider creative economy.

'Tutors and course leaders work under conditions that are both stressful and unsustainable,' he said. 'They are undervalued and feel intimidated. Dissent, whether it's from students, parents or tutors, is unwelcome. A culture of contempt has developed.'

Most of Crowley's criticisms are aimed at the University of Arts, London, the new joint name for a collection of formerly independent art colleges that each enjoyed a strong reputation. These are Central Saint Martins College of Art and Design, where Gormley, Conran, Lucian Freud and Gilbert and George trained; Chelsea College of Art and Design, where illustrator Quentin Blake, painter Chris Ofili, and sculptor Anish Kapoor were all students; Camberwell College of Arts, former stamping ground of portraitist Maggi Hambling and painter Howard Hodgkin; and Wimbledon College of Art, where children's illustrator and author Raymond Briggs and artist Peter Doig honed their skills. The London College of Fashion, a powerhouse of the British couture industry, is now also part of the university.

Crowley points to a lack of teachers and to the fact that film and video students at one college called for their fees to be refunded last year due to alleged 'staff shortages and lack of organisation'. In several establishments students no longer have a dedicated work space for themselves, he claims, while some have only six tutorials during an entire three-year undergraduate course. The university is bottom of the most recently published National Student Satisfaction Survey, with respondents rating its overall performance at 65 per cent.

A spokesman for the university, which is undergoing radical change and awaits the arrival later this year of a new rector, Nigel Carrington, a lawyer from the world of business, said they were aware of low student satisfaction levels, but had already moved to answer the complaints. 'I don't think the comparison with British Leyland is helpful. We have put in place a number of improvements. It is going to take a bit of time for that to be reflected in the student survey. Arts students are by their nature iconoclastic,' he said.

Facilities will improve still further, he added, when Central St Martins moves to a £170m building in Kings Cross, north London. The spokesman also pointed out that all the university's art colleges are run by artists, but that such a large organisation also needs managers. Recent success was reflected in the fact that a third of all designers showing at the London Fashion Show this month will come from Central St Martins and that all five winners of the trendspotting Jerwood photography prize were from the university.



Crowley's criticisms are not confined to the University of Arts, London. He sees the institution as a symptom of a general problem that is leading to falling standards while the country relies more and more heavily on producing creative talent. The painter goes on to point out that many stars in other fields, such as entertainment and design, began their careers in the inspirational atmosphere of a good art college.

Camberwell, for example, produced actor Tim Roth and designer Laurence Llewelyn-Bowen, Chelsea gave us actors Ralph Fiennes and Alan Rickman and the comedian and writer Alexei Sayle. The film director Mike Leigh, the actor John Hurt and the fashion designers, John Galliano, Stella McCartney and Alexander McQueen are all alumni of St Martins.

Martin Holman, an art critic, curator and a former governor of Wimbledon Art College, supports many of Crowley's arguments. 'The sector is certainly under pressure,' he confirmed. 'It is like a square peg being forced through a round academic hole.'

Holman bemoans the dwindling numbers of top calibre artists involved in teaching and the pressure to produce academic research rather than concentrate on artistic experimentation. 'Graham is right to say there is a problem with the kind of administration taking hold. There is a damp duvet of administration over the whole thing now.'

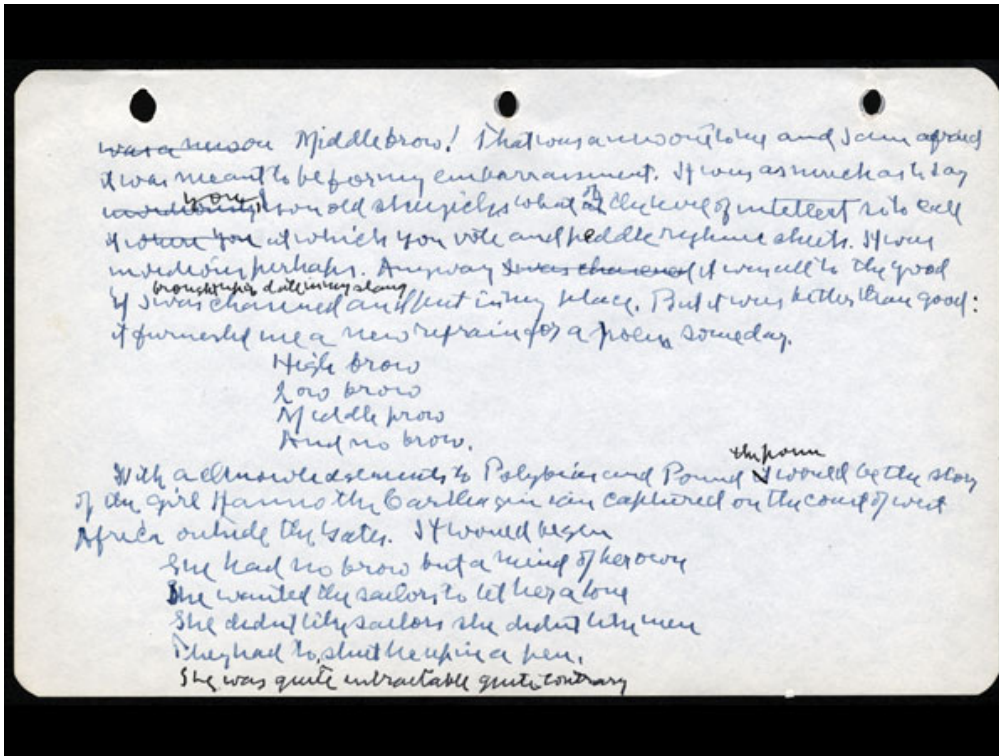
<http://arts.guardian.co.uk:80/art/news/story/0,,2255311,00.html?gusrc=rss&feed=40>

The Impossible Art of Deciphering Manuscripts

Robert Frost is hardly the first to give editors trouble.

By Megan Marshall

Posted Friday, Feb. 8, 2008, at 7:43 AM ET



Robert Frost has been having a hard winter. First the remote Vermont farmhouse where he summered from 1939 to 1963 was vandalized by partying teenagers.^{*} Windows were smashed, dishes broken, a chair split up for firewood, precious artwork and antiques splattered with beer and bodily fluids. Then last month, charges were raised against a scholarly edition of Frost's private notebooks. The work, first published in early 2007, had been heralded as offering a rare glimpse into the reclusive poet's creative process. But now the notebook transcriptions appear to be riddled with errors that made Frost look like "a dyslexic and deranged speller," who often "made no sense," according to poet William Logan, a professor at the University of Florida who compared sections of the published version with manuscript originals from the archives at Dartmouth College.

Where was the greatest damage done? In the minds of documentary editors—the people who prepare historical and literary documents for the press, not documentary *film* editors—probably on the page, not in the summer cottage. Current editorial standards require print versions of authors' journals to reproduce as faithfully as possible every stroke of the pen, every cross-out or insertion, even sometimes the look of the handwritten page, with ragged margins and random gaps. For dead writers, diary pages are the best evidence scholars have of the ways their minds worked—their first thoughts on a poem or story, their innermost ambitions and fears as human beings. No one wants to get that wrong.

The five years that Claremont-McKenna literature professor Robert Faggen spent transcribing, editing, and proofreading Frost's 48 notebooks for publication by Harvard University Press may seem like a long time. But it pales in comparison with the number of years many scholars—and teams of scholars—have devoted to making sense of the hard-to-decipher handwriting of authors from Thoreau to Henry James to the less-well-known but no less prolific 19th-century American diarist Caroline Healey Dall. The mistakes that have come to light in *The Notebooks of Robert Frost* speak to the challenges that all such toilers after the truth encounter in learning to read and represent in print a difficult or archaic "hand." And Frost's, cramped and crabbed like the man himself, is certainly one of them.



"Human beings were not meant to be consistent," explains Elizabeth Witherell, director of the Thoreau Edition—an enterprise begun at Princeton in 1966, three years after Robert Frost's death, and now based at the University of California at Santa Barbara. She might have been summing up the spiritual philosophy of Henry David Thoreau, the iconoclastic writer and naturalist, as notorious in documentary editing circles for his terrible handwriting as for the night he spent in jail after refusing to pay taxes in an anti-slavery protest. But no, it is the mistake-prone editor she speaks of: "Every time we force ourselves into consistency, we fail." Accurately rendering authors' jottings, often intended only as notes to self, into regular type verges on the impossible.

The solution is "many eyes." To catch inevitable errors, documentary editors arrange to have as many fresh readings of their transcriptions against the original documents as possible, a process that no doubt would have alarmed the very writers who hastily scribbled their private musings into so many cheap notebooks in the first place. Editors, who sometimes employ graduate students to help with the laborious task, train themselves and their assistants in the idiosyncrasies of a writer's hand, his common phrasings, and the "gestalt" of the era—likely references to people and places, world events and literary allusions, that must be annotated for today's readers.

One such reference seems to have tripped up Robert Faggen. A passage in which Frost alluded to fifth-century Mediterranean voyager Hanno the Carthaginian came out as "Hannof the Carlingian." Context is all. That same sentence mentioned the "coast of West Africa." Carthage, at least, should have popped to mind. In another passage, in which Frost compared a poet's early drafts to a baseball player's trial swings before stepping up to the plate, Faggen offered the phrase "picktie exhibition." Yes, "public" was hard to read—but even a "pickle" exhibition would have made more sense. When you're reduced to "counting humps," as documentary editors refer to those moments of despair when they find themselves decoding words letter by letter, you know you're in trouble. And, as always, the more complete read-throughs, the better. Faggen actually corrected himself on Hanno farther down on the same page, and got the annotation right. But the first mistaken reference remained for critics to pounce on.

Elizabeth Witherell describes the process of reading Thoreau's journals for the press as "like driving over a deeply potholed road—you read along and when you come to a word you can't understand you back up and run at it again with the force of what you *do* understand as momentum." Drawing on her knowledge of Thoreau's usual subjects and vocabulary, the context of the passage, and the range of word choices in mid-19th-century American English, Witherell finds the passage eventually "resolves into something recognizable." Although graduate students trained by editors like Witherell to help in the process are increasingly unfamiliar with 19th-century script—or even any script at all in the keyboard age—Internet expertise can be a help. Googling "Hanno the Carthaginian" nets pages of hits; "Hannof the Carlingian," none.

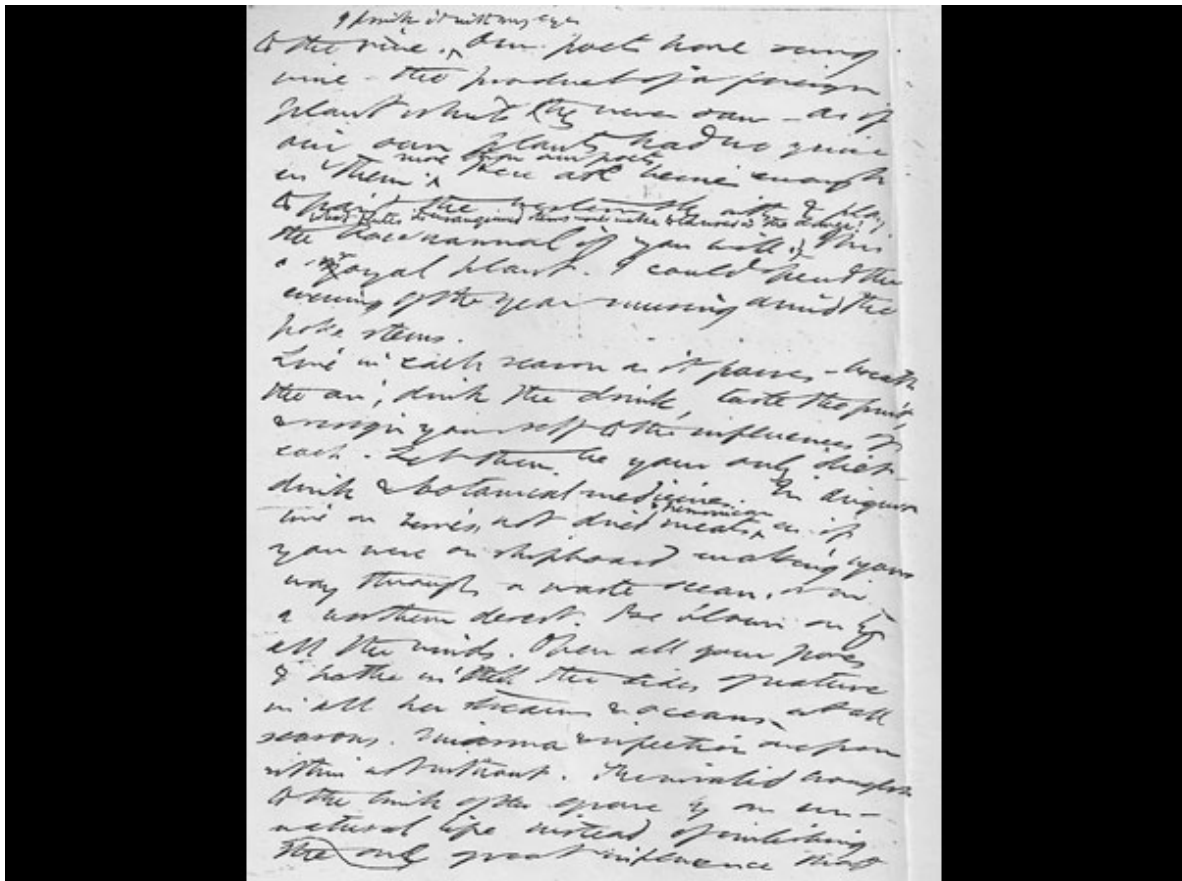
These days, university presses can no longer afford to employ the roomful of proofreaders that, at Princeton anyway, examined the earliest volumes put out by the Thoreau Edition. Now it's all up to the project editors. The Massachusetts Historical Society, which houses the long-running Adams Papers project—devoted to the publication of every extant letter by Presidents John Adams and John Quincy Adams and most of their family members—is one of the few organizations that still does transcribing, editing, proofreading, and formatting for many of its editions all under one roof. MHS archivists still recall the struggle to decipher the handwriting of Massachusetts Bay Colony's founding Gov. John Winthrop for the Society's edition of *The Winthrop Papers*. Plenty of guesswork was involved, and some go so far as to suggest that if Winthrop's famous "we shall be as a city upon a hill" sermon had been recorded in his own inscrutable hand, rather than that of an unknown 17th-century copyist, politicians today would be lacking some key material for speechifying.

Yet the rewards of the task can be great for a determined researcher. Dean Grodzins, biographer of radical abolitionist minister Theodore Parker, first read a Parker letter as an undergraduate at Williams College in 1982, and he was hooked. The letter, which by a fluke wound up in the college archives, told of Parker's protest against the Fugitive Slave Law—which landed *him* in jail—but contained so many references to obscure figures of the time that Grodzins was still unraveling the connections nearly 20 years and countless manuscript boxes and microfilm reels later as he prepared *American Heretic: Theodore Parker and Transcendentalism* for publication. By then, Grodzins was so familiar with Parker's handwriting—often just a shorthand—and his characteristic speech patterns that he could tell when Parker wrote "m. c. h. & s." in his sermon notes he meant "mind, conscience, heart and soul."

Parker, too, had famously bad handwriting. William Lloyd Garrison, hard-line abolitionist and editor of the *Liberator*, once complained that an essay Parker submitted was so unreadable it would require a dozen assistants to interpret his clotted sentences for the printer "without any serious blunders." Grodzins, nevertheless, found ways to decipher Parker's private journals, even one stunning passage written in code. Grodzins sensed Parker was unhappily married, but he had little direct evidence. Parker's wife, Lydia, often read through her husband's journals when he was out of the house, so the preacher couldn't bare his soul there. Parker sometimes wrote in Greek or Latin, however, languages Lydia didn't know. One such passage, Grodzins divined from its uncharacteristic word spacings, was actually English written with Greek characters. Putting together crossed out words and the Greek alphabet spellings, Grodzins found that Parker had written: "My wife is a *DEVIL*. I. HAVE. NO. HOPE. in. LIFE."

Most editors of scholarly editions have stories to tell about the one word that stumped them. For decades, the founding editor of the Thoreau Edition, Walter Harding, believed Thoreau had written the word *Ecology* in a letter of the 1850s, trumping the first known use of the term by eight years. The OED had even changed its entry to include Thoreau's usage on Harding's say-so. But when a botanist pressed him on the claim, Harding searched further and realized that what he'd taken for a capital *E* was really a *G*. *Geology* was the word Thoreau had written.

The 19th-century practice of cross-writing has left many scholars scratching their heads. Trying to fit as many words as possible onto a single sheet of paper, letter-writers filled a page, then turned it 90 degrees



and wrote perpendicularly back across their own handwriting. Even with the most regular hand, confusion is inevitable. Elizabeth Peabody, the Transcendentalist philosopher and matchmaker for her two younger sisters, who married Horace Mann and Nathaniel Hawthorne, wrote about her realization that she was *not* in love with Horace Mann in a cross-written letter to her sister Mary—who *was*. Elizabeth explained her feelings for the 36-year-old, recently widowed politician, whose hair was said to have turned white in a matter of weeks as he mourned his young first wife: "his situation, his grey hair—his sorrow have ever precluded from my imagination" the possibility that she would fall in love. For Elizabeth Peabody, it was



sour grapes—she'd been rebuffed. But for scholars, the question was, did Peabody write "grey hair," "grief, loss," or "grave air"?

Pierre Walker and Greg Zacharias, editors of the new edition of Henry James' complete correspondence, puzzled over a word in a cross-written letter James sent to his intimate friend Grace Norton. Was James signing himself "unutterably yours" or "unalterably yours"? The problem was exacerbated by the editors' awareness that James' lowercase u's and a's often looked identical. And the master was sloppy in crossing his t's, turning back to the task only after coming to the end of a line. Ultimately, Walker and Zacharias settled on *unutterably*, after making a systematic search of all James' letters to Norton and finding a handful of *unutterablys* sprinkled through, but no *unalterablys*.

While the difference between *unutterably* and *unalterably* may not seem momentous, Walker and Zacharias' edition is an attempt to rectify Faggen-like errors in earlier volumes assembled by Leon Edel, James' biographer—who had the writer crossing the nonexistent "Italvia Pass" between Switzerland and Italy, rather than the Stelvio Pass, in March of 1869. And, to the documentary editor, no quirk of spelling, punctuation, or capitalization is insignificant. "These things aren't minor," says Helen Deese, who spent 20 years editing the diaries of 19th-century women's rights activist Caroline Healey Dall for the MHS' edition, expected to run to four volumes. "They are your stock in trade; you're there to get them right."

Robert Frost observed, in an early notebook transcribed in Faggen's edition, that men are ruled by four fears: "of jail, of the poor house of the insane asylum and of Hell." He might also have added a fifth—the fear of being censured by colleagues for easily avoidable errors in a scholarly edition. Certainly this fear focuses the mind of every scholar devoted to accuracy. Yet would Frost himself really have cared about the mistakes? In his poem "A Passing Glimpse," Frost writes of the ephemeral nature of perception, of beauty itself—themes that are ever-present in his fragmentary, Orphic notebook entries as reproduced by Faggen. A sideways glance yields more than a trained, fixed gaze. The crusty New England bard may be having the last laugh:

Was something brushed across my mind
That no one on earth will ever find?

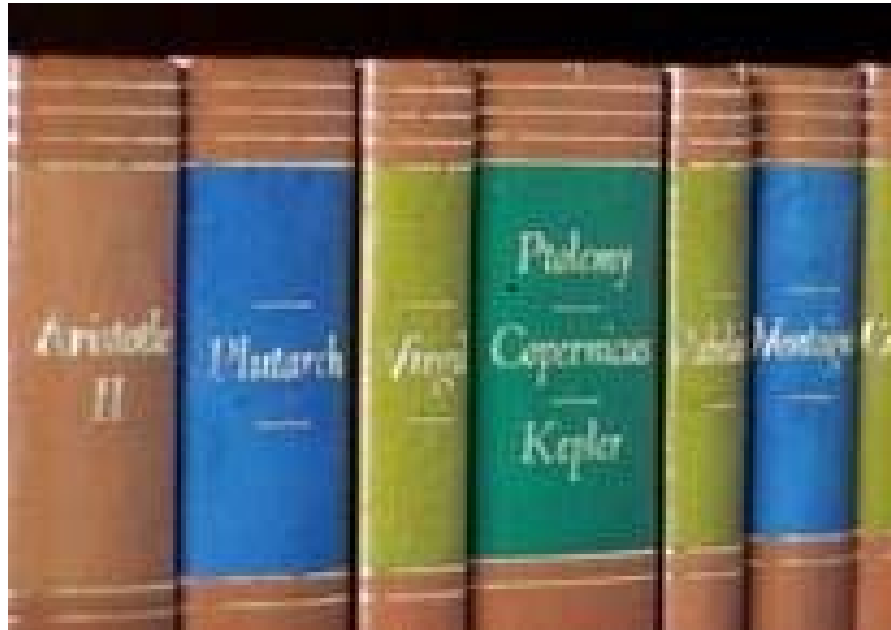
Heaven gives its glimpses only to those
Not in a position to look too close.

Correction, Feb. 11, 2008: *This article originally stated that partying teenagers vandalized Frost's Vermont cabin. In fact, they vandalized his farmhouse. (Return to the corrected sentence.)*

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Can Liberal Arts Colleges Be Saved?



By Victor E. Ferrall Jr.

The 2004 Carnegie Classifications identified only 95 liberal arts colleges with no graduate school where 80 percent or more of all graduates are liberal arts and sciences, not career-based, majors. They accounted for a mere 0.8 percent of the total higher education enrollment in the U.S. In a 1990 Yankelovich survey, two-thirds of respondents believed the main reason to go to college was to get the skills necessary for a good job. A 2004 University of California at Los Angeles survey reported that three-quarters of all students gave as their reasons for going to college “to get training for a specific career,” “to be able to get a better job,” and/or “to be able to make more money.”

This year, a Special Commission appointed by U.S. Secretary of Education Margaret Spellings “to consider how best to improve our system of higher education” completed a year long study. Its 55-page report of analysis and recommendations does not even mention liberal education or the liberal arts.

The 95 “true” liberal arts colleges, the pure practitioners of liberal education, are in trouble. The number of persons who view themselves as liberally educated is declining. The number who wish they were liberally educated is declining even faster and the number who think they know what a liberal education is, or even that they would like to know, is shrinking fastest of all. In recent years, liberal education’s slide has been masked to some extent by demographics, the upsurge in applicants for all higher education resulting from the flood of college age children produced by the baby boomers. The flood is coming to an end.

A career-directed education has become the goal of many, if not most, young people eager to get ahead. A purely materialistic motivation for getting an education is now the norm, not the exception. There is economic pressure on liberal arts colleges to add career-directed courses and programs to attract students. The most prestigious colleges are to some extent relieved from this pressure by their wealth and the fact that so many of their graduates know they will go on to graduate and professional schools and therefore feel less need to collect a commercial credential at the undergraduate level; to learn what Elia Kazan’s immigrant father called something “use-eh-full.”

Even the richest colleges, however, are not immune from pressure to expand their curricula in vocational directions in order to attract students who are more interested in getting a good job and making money than in Aristotle, Descartes and Rousseau, and to make sure top students are not lured away by so-called honors colleges at state universities.

Can liberal arts colleges be saved or are they, to take Paul Neely’s apt analogy, becoming like high end passenger trains that went out of business because no matter how well they performed, consumers had



come to prefer traveling by plane and automobile? Unless the case liberal arts colleges make for liberal education and for themselves is reformed, their curricula restored, and the across the board teaching excellence of their faculties secured, the answer in all probability is that those that survive will evolve into purveyors of career-directed, not liberal, education.

The Case as It Is Made Now

Much of the Case currently made for liberal education is internally inconsistent, cynically cobbled together to pander to the preconceptions of high school students and their parents, unsupported and/or simply not credible. As the steady decline in the demand for liberal education shows, the Case is not persuasive to those who are not pre-sold, i.e. those who need to be persuaded. Consider the following Case elements:

(1) Even though it won't get you a job, a liberal education really is useful because it teaches students how to think critically.

The "critical thinking" mantra is an especially good example of embracing a bad argument solely because it is not laughable on its face. Never mind that no one knows what "critical," as opposed to plain good, thinking is, or that there is no reason to suppose that one is more likely to become a critical thinker studying English literature than business management, or that there is certainly no reason to suspect that English literature professors are themselves more critical thinkers, or more capable of teaching critical thinking than business management professors. Yet no single assertion is more central to the Case made for liberal arts educations than the claim it will make you a more critical thinker, whatever that is.

(2) A liberal education best provides oral and written communication skills.

It is certainly true that a liberal education can provide these skills, but is it more true than for career-based education (or for that matter for the education that comes from being in the workplace)? There is no convincing evidence that the liberally educated are more effective communicators and the fact that the assertion is totally unsupported undercuts the Case as a whole.

(3) Liberal arts colleges provide an international education.

We live in a global world and it behooves liberal arts colleges to internationalize their curricula to the maximum extent possible. This does not mean, however, that the following common liberal arts promotion makes sense: "The globe is shrinking, we live in an international world, and our college recognizes these important facts by encouraging all students to spend a semester abroad."

Let's restate this promotion from the point of view of a potential student or parent: "You have told me that spending 26 months at your college over the next four years at a cost of \$150,000-\$200,000 is a sound investment, but now you say I should spend more than 10 percent of that time somewhere else. Are you trying to cut your costs by giving me less or do you simply believe 26 months is more than I need?"

Everyone knows that study abroad is a useful and often meaningful, even life-changing, experience. But it makes no sense to say that it should be done at the expense of, rather than in addition to, the 26 months.

(4) You can study the subjects you like best and are most interested in.

In an effort to attract students, liberal arts colleges have reduced, and some have even eliminated, course requirements. To the extent they do so they turn over liberal education curriculum design to students who by definition are not yet liberally educated and virtually insure that their education will be less broad, less liberal. Maria Montessori's maxim "follow the child" may make sense in first grade, but not at a liberal arts college unless, of course, the college's education philosophy is that students will find liberal education on their own without the college's guidance, in which case why should they spend \$200,000 for 26 months?

(5) You will get good grades and this will help you get into the graduate or professional school of your choice.



Colleges don't explicitly include grade inflation in their pitches to students, but everybody knows it is going on. In fact, grade inflation serves only to cheapen the value of a liberal arts degree and signals to students that a liberal education is simply a part of playing the credential-seeking game, of getting ahead. Further, since everyone is doing it, it doesn't work very well.

The Case That Needs to Be Made

In contrast to these frivolous, disingenuous or wrong claims, the distinctively desirable features of a liberal arts education are de-emphasized or omitted entirely from the Case because it is assumed by admissions staff that they won't be believed or understood.

(1) The quality of a liberal education that makes it so effective is that the subject matter studied is not "use-eh-full."

It is the very "uselessness" of what liberal arts students study that opens the door to their appreciating knowing for the sake of knowing, that drives home the point that learning is of value in and of itself whether or not it leads directly to a marketable skill. It is possible to realize these things while studying banking or engineering, but it is much more difficult because the student is constantly distracted from the utility of acquiring knowledge by the utility of the knowledge being acquired. The genius of the American system of liberal education is that it eliminates this distraction. Its uselessness separates knowing from need to know, learning from need to learn, desire to understand from need to understand.

(2) The best teaching is at liberal arts colleges.

If liberal arts colleges pay attention in hiring, training, supporting and tenuring faculty, there is really no way universities, no matter how highly ranked, can match them in teaching excellence. The mission of universities is diverse and complex, the mission of liberal arts colleges is singular, to provide a liberal education to undergraduates. For the most part, the most famous names in higher education are associated with major universities, not liberal arts colleges, but the severe limits on their worth to university undergraduates are well known: limited exposure to students, huge lecture courses, smaller classes taught by graduate students, and so on. Universities, by their very nature, inescapably focus on specialization, not breadth.

Universities are aware of their inherent disadvantages in providing undergraduate liberal arts education and in recent years some have made efforts to shore up their performance by creating so-called honors colleges and requiring full professors to teach an undergraduate course now and then. By and large, however, these are Band-Aid efforts. A Nobel laureate once complained to me about being required to teach an undergraduate seminar. "I'm a professor, not a teacher," he growled.

(3) Your life will be fuller and richer if you read Aristotle, Descartes and Rousseau.

There is no doubt that this is a tough sell for college bound, wealth-seeking, "what's in it for me" philistines and their nervous parents, but enrichment is inescapably central to the value of the liberal arts. Before I came to the academy, I was a lawyer. I know to a certainty that one does not learn how to practice law until one starts doing it. It is not learned in law school. Therefore, a career-directed, pre-law program at the undergraduate level makes no sense, i.e., even though vocational, it is neither useful nor enriching. By far the best, and often the only, way to learn any career skill is by practicing it. Career-directed courses are always of limited value; a liberal education is always enriching. The wise person, therefore, seeks both a liberal education and an on-the-job career education.

Curriculum

In the early 19th century, subject matter that made up the liberal arts curriculum was fixed: the ancient classics, rhetoric, logic, Greek and Latin. It was what a gentleman, a liberally educated person, had to know. Today, while the curriculum is flexible, taking advantage of the special skills and interests of the faculty, it still defines liberal education at each liberal arts college. It is the responsibility of the faculty — not the students, not the administration — to create a curriculum and the goal in doing so must be to make the best possible use of the faculty to insure that the college's graduates are securely launched on a lifetime of liberal education.



Distribution, as opposed to course, requirements represent a partial abrogation of this responsibility. Perhaps after the first two or three years a distribution requirement makes sense, but course requirements come first. Elimination of requirements is a marketing, not educational, strategy. Since the objective of liberal arts colleges is to provide a liberal education the old Brown University no requirements strategy is disingenuous as well as wrong.

A liberal education is broad, not narrow. The more major requirements imposed, the narrower the resulting education. If all departments reduced their major requirements, liberal education would be facilitated. Experiencing some depth of inquiry is a part of a liberal education, but not at the expense of breadth. Graduate and professional schools, not to mention getting a job, will give students all the depth they need.

Which courses offered by a department receive the greatest departmental attention — survey and entry-level courses or specialized advanced courses for major? Too often, it is the latter. I well remember a talk given by a creative writing professor who told us that the single most important and enriching course in his undergraduate career was Astronomy 101. At liberal arts colleges, his experience should be commonplace, not exceptional. 101 courses are the foundation of a liberal education.

Interdisciplinary courses are inherently pro-liberal arts. There are problems with them, however, including that creating a truly interdisciplinary syllabus is difficult and more work to teach, and that there is not the kind of recognition for success in interdisciplinary teaching that exists within departments. The steps colleges can take to ameliorate or eliminate these problems are obvious and should be taken.

A liberal education is best pursued when students share the learning experience. Common courses are a sound device for maximizing sharing. Similar problems inhere in teaching common courses as in interdisciplinary courses and require the same steps to remove them.

A much-used cost containment strategy is to combine departments, e.g. anthropology and sociology, art and art history, philosophy and religion. Reduction in, or failure to increase, the number of teachers in the departments is a common byproduct (or cause) of such combinations. While there is nothing inherently wrong with combined departments and, indeed, to some extent they may partake of the positive liberal arts qualities of interdisciplinary courses, combining departments can have unintended adverse consequences on the quality of instruction and should only be entered into after careful analysis. On the other side of the coin, too many departments can mark the way towards career-based education, especially in the social and physical sciences. Many universities, for example, offer dozens of economics majors, each directed to a specific career path and each leading away from breadth. Liberal arts colleges are to some extent insulated from this practice by the relatively small size of their faculties, but they are not immune.

There is nothing wrong with career-based courses and there is nothing wrong with encouraging students to pursue them, but not in lieu or instead of liberal arts courses. “Take them in the evening, in the summer, or before or after you graduate, but for the 26 months you are with us you will pursue a liberal education full time” is the correct rule for liberal arts colleges.

No course credit should be given for non-academic initiatives. If students have excellent summer work experiences or organize successful public service programs, they should put them on their resumes, not in their transcripts. The quality of the liberal education a college delivers is measured by what happens at the college, not in a congressman’s office or at a European university. If students can get a better liberal education somewhere other than at the college, why should they attend the college at all? Off-campus experience can supplement and enhance the liberal education a college offers, but not replace it.

The Faculty

Sadly, it is easier for liberal arts colleges to raise money for buildings, sports, or almost anything other than faculty salaries and support. If, however, liberal arts colleges do not offer the very best teaching, their prospects for the future are at best problematic. Faculties are the heart and soul of liberal education.

It makes no sense to staff a liberal arts college with teachers who are not themselves liberally educated. (Indeed, if college presidents, vice presidents, deans and other administrators are to play a meaningful role in directing the course of a liberal arts college, they also need to be liberally educated.) Hiring



procedures used by liberal arts colleges – posting ads that ask candidates to furnish information about their qualifications to teach a particular specialty; 20 minute interviews in hospitality suites at professional society meetings where narrow specialists gather; observing candidates teach a 50-minute class to students chosen because they are majoring in the candidates area of specialization – are not well-calculated to reveal the extent and quality of candidates' liberal education.

Certainly little that happened to candidates at the graduate schools where they earned their Ph.D.s provides assurance that the candidates are liberally educated. Graduate schools are antithetical to liberal education. They put a premium on and reward narrowness, not breadth. Indeed, most graduate schools have precious little to do with preparing their students to be effective teachers. The graduate school game is research and publication, no matter how frivolous or insignificant.

Worse, graduate schools dissemble about their graduates. A letter of recommendation from a graduate school dean or professor saying a graduate will be a good liberal arts college teacher frequently really means the graduate school believes the graduate will not be a successful researcher. Graduate school deans and professors often have little or no knowledge about the potential teaching capability of their students, and care less.

The one sure way to find liberally educated, potentially excellent teachers is to actively look for them, not wait for them to drop in at hospitality suite or respond to an advertisement. Networking is the key, talking to friends and friends of friends. Business understands this and there is no reason colleges can't, too.

The number of new Ph.D.'s has increased faster than the number of college teaching positions. This can put colleges in the enviable position of having a surfeit of candidates to choose from. Too often, however, this advantage is lost because a first cut is made on the basis of the ranking of the universities from which candidates' degrees were received. There is little reason to believe a social historian from Harvard is more liberally educated or more likely to become an excellent teacher than one from a lower ranked institution. The efforts and aptitudes required to gain admission to and earn a Ph.D. from Harvard (or any other first rate graduate school) are not closely correlated, if at all, with good teaching. Indeed, a respectable argument can be made that they are counter indicators. In fact, it is far from self-evident that liberal educatedness and teaching excellence are positively correlated with possession of a Ph.D. When a college has an opportunity to hire a potentially excellent teacher who lacks the Ph.D. credential, a retired judge or legislator perhaps, or a linguist or artist (even if an M.F.A. is also missing), the opportunity should be seized.

Hiring to fill a particular slot, the most common practice, itself risks losing teaching excellence. Obviously, a chemist cannot be hired to replace a retiring historian, but if a medievalist is the strongest candidate to replace a retiring professor of modern European history, changing course offerings should at least be seriously considered.

Flexibility in hiring is an especially important consideration in hiring minority faculty. The likelihood that a minority group member highly qualified and desiring to teach organic chemistry at a liberal arts college will happen to be available the very year old Charlie decides to retire from the chemistry department is not high. But such a candidate might have been available at an earlier time and, even though it did not fit perfectly into the then perceived staffing requirements of the chemistry department, grabbing the candidate before he or she went somewhere else could have made good sense.

If diversity in the student body is desirable, indeed essential, for a liberal education, as almost all liberal arts colleges acknowledge, then faculty diversity is essential, too. If there is no minority organic chemist available, there may be an outstanding astronomer or sociologist who will advance the liberal arts excellence of the college as well as the diversity of its faculty. When Branch Rickey set out to hire major league baseball's first black player, he did not search for a third baseman, but rather for the best player he could find, and then played him where he fit in; at third base. Incidentally, in hiring Jackie Robinson, Mr. Rickey gave full consideration to Mr. Robinson's personal, as well as athletic, qualifications. The parallel to giving full consideration to liberal educatedness as well as academic qualifications in hiring teachers is apt.



Once hired, most new teachers need to be taught how to teach. This did not happen to most of them at graduate school. Throwing them into the classroom and letting them sink or swim, a traditional approach, makes no sense. Instruction of new teachers by faculty members who are skilled teachers should be intensive and continuing, not hit or miss. The progress of new teachers needs to be systematically monitored. Too often what is known about a young faculty member's teaching skills is as best anecdotal, largely based on passing comments by students. Reliable evaluation is essential to effective training and, of course, to making sound tenure decisions.

In the popular press, tenure is controversial, seen by many outside the academy as an undeserved life-long sinecure. The claimed centrality of tenure to preserving academic freedom, heavily relied on by tenure supporters, is not persuasive. The freedom to assert controversial positions is not an issue for the overwhelming majority of faculty members. Instances where it can reasonably be said that, but for tenure, a faculty member would be fired are rare. In addition, academic freedom can be contractually guaranteed without tenure, e.g. "No professor can be disciplined, demoted or terminated for expressing a controversial or unpopular view."

Tenure is a ruthless, up or out system. A faculty member denied tenure at one college is less likely to get it somewhere else. Tenure denial is a wrenching experience not only for the teacher denied but also for the persons making the denial decision. The human response at most teaching-oriented institutions is to try to avoid making it. Doubts are resolved in favor of granting tenure. Weaknesses are under-weighted and strengths are over-weighted to reach the "grant" decision. Non-teaching contributions by the candidate are given significant weight to justify granting tenure to a candidate whose teaching is not first class. The result is "acceptable" or "pretty good," but not excellent, teachers are rewarded with tenure and take possession of the college's limited number of teaching positions for the next 25-30 years.

In making tenure decisions substantial weight is frequently assigned to a candidate's publications. Indeed, at some of the finest liberal arts colleges a published book is a tenure requirement. This may make sense at graduate schools where the objective is to promote scholarship and research, not teaching. It makes no sense at liberal arts colleges. It is commonly observed that scholarship informs and enhances teaching. If this is so, as I strongly believe it to be, publications need not be considered separately as a part of the tenure review process because their enhancing effect will be reflected in the teaching performance of the candidate. On the other side of the coin, poor teachers can produce outstanding scholarship. They should be encouraged to devote their lives to graduate school research, not liberal arts college teaching.

The first place most businesses look to save money is workers' salaries. Such cost cutting efforts, however, are frequently frustrated by the pressures of competition and unions. At liberal arts colleges these pressures are more easily resisted. The result is that faculty salary increases tend to lag behind other employment venues and sometimes even languish below the rise in cost of living. Since far and away the most valuable resource of a college is its faculty, this is foolish.

The reluctance to grant salary increases to faculty is far less apparent in the case of college administrators. Perhaps in making salary decisions, business executive members of college boards of trustees identify faculty with their factory workers, and administrators with themselves. It has been observed that when the salary of a college or university president reaches three times that of senior faculty, a potentially destructive disequilibrium is created. This disequilibrium is becoming more common.

Salaries reflect perceived value. The fact that many liberal arts colleges pay their teachers poorly reflects how the institutions value teachers' services, and inevitably how teachers value themselves. I am aware of no established benchmark for what faculty salaries ought to be, or of accepted comparables. There are, however, some useful guidelines. First, faculty salaries should increase no less rapidly than those of administrators. Second, salaries of senior faculty should increase no less rapidly than starting salaries for assistant professors. Third, teaching excellence should be rewarded by salary increases, not bonuses or prizes which are always sporadic, capricious and often devices designed to portray the institution as more generous than it in fact is. Fourth, special effort should be given to encouraging donors to earmark gifts for faculty salaries.

Conclusion





A not insignificant portion of the challenges now faced by liberal arts colleges are of their own making, resulting from competition between them. Costs have been increased by the addition of programs and resources for the specific purpose of attracting students away from competing colleges. Competition has caused dollars to be diverted from important uses, e.g. for faculty salaries and support, to flashy facilities and programs. Grade inflation and the elimination of requirements are examples of competition between liberal arts colleges that degrades the offerings of all of them.

A few liberal arts colleges are wealthy, but most struggle financially. They all, however, are threatened by declining demand for liberal education. If they have any long-run chance of resisting the vocationalizing of their curricula, they need to make common cause, to work together, not at odds with each other.

Victor E. Ferrall Jr. was president of Beloit College from 1991 to 2000. Before then, he practiced law in Washington. He is currently writing a book on liberal arts colleges.

*The original story and user comments can be viewed online at
<http://insidehighered.com/views/2008/02/11/ferrall>.*

Double Exposure

Diana Vishneva plays both sides.

By Apollinaire Scherr

- Published Feb 10, 2008



Great dancers are attuned to a strange fact: Dance doesn't distinguish artist from art object, the dancer from the dance. Working to pry the two apart, dancers often end up proffering metaphors of escape—from circumstance, station, self-delusion.

The young Rudolf Nureyev, to use an extreme example, seemed to be trying to overtake his own steps. You couldn't tell whether he was a demon or shaking one off, but the possession was impressive. Diana Vishneva, 31, is also a mesmerizing beauty from the illustrious Kirov Ballet, a master of channeling feeling through a classical vessel's restraint, and so peripatetic a performer that her repertory has become her only real home. She plays both character and creator at once. She digs into her role and lifts herself out of the story to reveal, godlike, its scope.

If our culture ever developed a hunger for honest transcendence, Vishneva would become a real celebrity, with hordes of sensitive young women throwing practice tutus over their street clothes. In the meantime, next week brings "Diana Vishneva: Beauty in Motion" to City Center—a program of works made for her (including a major piece by the much-admired Bolshoi director Alexei Ratmansky, who, as of last week at least, looked poised to replace Christopher Wheeldon as City Ballet's resident choreographer). In April, the Kirov moves in. And beginning in May, Vishneva dances as usual with American Ballet Theatre.

Her take on Kenneth MacMillan's *Romeo and Juliet* at ABT the past two years gives some idea of how she weds pathos to insight. In the scene where Juliet downs the sleeping potion that will lend her the



“likeness of shrunk death,” Vishneva doesn’t just depict Juliet’s fear of death, she previews her dying. Gulping the ghoulish drink, she sinks to her knees and staggers up, again and again: a glimpse of Juliet’s terrible future that intensifies our suffering when it finally arrives. Vishneva does that Shakespearean thing of taking a modest theme (in *Macbeth*, ambition; in *Hamlet*, indecision) and letting it roll. On her knees, she echoes an earlier moment, when Juliet prays at the bedroom altar. The second, unstrung prayer confirms what the first merely hints at: Juliet is desperate, and she’s doomed. As the potion overwhelms her, she crawls splay-kneed like a baby onto the bed. She’s burrowing back to before she was a Capulet, when she and Romeo had a chance.

Vishneva believes in story ballets. “They last because they are so rich,” she says. She even believes in the stories: Betrayed heroines predominate because “in real life, women are always betrayed.” But she doesn’t need a story to illuminate a dance.

Last month, she learned an intricate duet with Desmond Richardson for Dwight Rhoden’s plotless ballet in “Beauty in Motion.” The piece is about two people who never quite connect, I was told. But this section, at least, was such a micromanaged, push-pull affair that it wasn’t clear how regret or loss would enter in. Then Vishneva started playing with timing. She stretched out the transitions between the exquisite tangles with Richardson until she was falling from one position to the next. And there it was—longing.

Find this article at:

<http://www.nymag.com/arts/classicaldance/dance/features/43858>

Learning to Lie

Kids lie early, often, and for all sorts of reasons—to avoid punishment, to bond with friends, to gain a sense of control. But now there’s a singular theory for one way this habit develops: They are just copying their parents.

By Po Bronson

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In the last few years, a handful of intrepid scholars have decided it’s time to try to understand why kids lie. For a study to assess the extent of teenage dissembling, Dr. Nancy Darling, then at Penn State University, recruited a special research team of a dozen undergraduate students, all under the age of 21. Using gift certificates for free CDs as bait, Darling’s Mod Squad persuaded high-school students to spend a few hours with them in the local pizzeria.

Each student was handed a deck of 36 cards, and each card in this deck listed a topic teens sometimes lie about to their parents. Over a slice and a Coke, the teen and two researchers worked through the deck, learning what things the kid was lying to his parents about, and why.

“They began the interviews saying that parents give you everything and yes, you should tell them everything,” Darling observes. By the end of the interview, the kids saw for the first time how much they were lying and how many of the family’s rules they had broken. Darling says 98 percent of the teens reported lying to their parents.

Out of the 36 topics, the average teen was lying to his parents about twelve of them. The teens lied about what they spent their allowances on, and whether they’d started dating, and what clothes they put on away from the house. They lied about what movie they went to, and whom they went with. They lied about



alcohol and drug use, and they lied about whether they were hanging out with friends their parents disapproved of. They lied about how they spent their afternoons while their parents were at work. They lied about whether chaperones were in attendance at a party or whether they rode in cars driven by drunken teens.

Being an honors student didn't change these numbers by much; nor did being an overscheduled kid. No kid, apparently, was too busy to break a few rules. And lest you wonder if these numbers apply only to teens in State College, Pennsylvania, the teens in Darling's sample were compared to national averages on a bevy of statistics, from academics to extracurriculars. "We had a very normal, representative sample," Darling says.

For two decades, parents have rated "honesty" as the trait they most wanted in their children. Other traits, such as confidence or good judgment, don't even come close. On paper, the kids are getting this message. In surveys, 98 percent said that trust and honesty were essential in a personal relationship. Depending on their ages, 96 to 98 percent said lying is morally wrong.

So when do the 98 percent who think lying is wrong become the 98 percent who lie?

It starts very young. Indeed, bright kids—those who do better on other academic indicators—are able to start lying at 2 or 3. "Lying is related to intelligence," explains Dr. Victoria Talwar, an assistant professor at Montreal's McGill University and a leading expert on children's lying behavior.

Although we think of truthfulness as a young child's paramount virtue, it turns out that lying is the more advanced skill. A child who is going to lie must recognize the truth, intellectually conceive of an alternate reality, and be able to convincingly sell that new reality to someone else. Therefore, lying demands both advanced cognitive development and social skills that honesty simply doesn't require. "It's a developmental milestone," Talwar has concluded.

This puts parents in the position of being either damned or blessed, depending on how they choose to look at it. If your 4-year-old is a good liar, it's a strong sign she's got brains. And it's the smart, savvy kid who's most at risk of becoming a habitual liar.

By their 4th birthday, almost all kids will start experimenting with lying in order to avoid punishment. Because of that, they lie indiscriminately—whenever punishment seems to be a possibility. A 3-year-old will say, "I didn't hit my sister," even if a parent witnessed the child's hitting her sibling.

Most parents hear their child lie and assume he's too young to understand what lies are or that lying's wrong. They presume their child will stop when he gets older and learns those distinctions. Talwar has found the opposite to be true—kids who grasp early the nuances between lies and truth use this knowledge to their advantage, making them more prone to lie when given the chance.

Many parenting Websites and books advise parents to just let lies go—they'll grow out of it. The truth, according to Talwar, is that kids grow into it. In studies where children are observed in their natural environment, a 4-year-old will lie once every two hours, while a 6-year-old will lie about once every hour and a half. Few kids are exceptions.

Next: Why lying can be a symptom of bigger problems.

By the time a child reaches school age, the reasons for lying become more complex. Avoiding punishment is still a primary catalyst for lying, but lying also becomes a way to increase a child's power and sense of control—by manipulating friends with teasing, by bragging to assert status, and by learning he can fool his parents.

Thrown into elementary school, many kids begin lying to their peers as a coping mechanism, as a way to vent frustration or get attention. Any sudden spate of lying, or dramatic increase in lying, is a danger sign: Something has changed in that child's life, in a way that troubles him. "Lying is a symptom—often of a

bigger problem behavior,” explains Talwar. “It’s a strategy to keep themselves afloat.”



In longitudinal studies, a majority of 6-year-olds who frequently lie have it socialized out of them by age 7. But if lying has become a successful strategy for handling difficult social situations, a child will stick with it. About half of all kids do—and if they’re still lying a lot at 7, then it seems likely to continue for the rest of childhood. They’re hooked.

"My son doesn't lie," insisted Steve, a slightly frazzled father in his mid-thirties, as he watched Nick, his eager 6-year-old, enthralled in a game of marbles with a student researcher in Talwar's Montreal lab. Steve was quite proud of his son, describing him as easygoing and very social. He had Nick bark out an impressive series of addition problems the boy had memorized, as if that was somehow proof of Nick's sincerity.

Steve then took his assertion down a notch. "Well, I've never heard him lie." Perhaps that, too, was a little strong. "I'm sure he must lie some, but when I hear it, I'll still be surprised." He had brought his son to the lab after seeing an advertisement in a Montreal parenting magazine that asked, "Can Your Child Tell the Difference Between the Truth and a Lie?"

Steve was curious to find out if Nick would lie, but he wasn't sure he wanted to know the answer. The idea of his son's being dishonest with him was profoundly troubling.

But I knew for a fact his son did lie. Nick cheated, then he lied, and then he lied again. He did so unhesitatingly, without a single glimmer of remorse.

Nick thought he'd spent the hour playing a series of games with a couple of nice women. He had won two prizes, a cool toy car and a bag of plastic dinosaurs, and everyone said he did very well. What the first-grader didn't know was that those games were really a battery of psychological tests, and the women were Talwar's trained researchers working toward doctorates in child psychology.

One of Talwar's experiments, a variation on a classic experiment called the temptation-resistance paradigm, is known in the lab as "the Peeking Game." Through a hidden camera, I'd watched Nick play it with another one of Talwar's students, Cindy Arruda. She told Nick they were going to play a guessing

game. Nick was to sit facing the wall and try to guess the identity of a toy Arruda brought out, based on the sound it made. If he was right three times, he'd win a prize.

The first two were easy: a police car and a crying baby doll. Nick bounced in his chair with excitement when he got the answers right. Then Arruda brought out a soft, stuffed soccer ball and placed it on top of a greeting card that played music. She cracked the card, triggering it to play a music-box jingle of Beethoven's *Für Elise*. Nick, of course, was stumped.

Arruda suddenly said she had to leave the room for a bit, promising to be right back. She admonished Nick not to peek at the toy while she was gone. Nick struggled not to, but at thirteen seconds, he gave in and looked.

When Arruda returned, she could barely come through the door before Nick—facing the wall again—triumphantly announced, “A soccer ball!” Arruda told Nick to wait for her to get seated. Suddenly realizing he should sound unsure of his answer, he hesitantly asked, “A soccer ball?”

Arruda said Nick was right, and when he turned to face her, he acted very pleased. Arruda asked Nick if he had peeked. “No,” he said quickly. Then a big smile spread across his face.

Without challenging him, or even a note of suspicion in her voice, Arruda asked Nick how he'd figured out the sound came from a soccer ball.

Nick cupped his chin in his hands, then said, “The music had sounded like a ball.” Then: “The ball sounded black and white.” Nick added that the music sounded like the soccer balls he played with at school: They squeaked. And the music sounded like the squeak he heard when he kicked a ball. To emphasize this, his winning point, he brushed his hand against the side of the toy ball.

Next: How parents unwittingly teach kids to lie.





This experiment was not just a test to see if children cheat and lie under temptation. It was also designed to test a child's ability to extend a lie, offering plausible explanations and avoiding what the scientists call "leakage"—inconsistencies that reveal the lie for what it is. Nick's whiffs at covering up his lie would be scored later by coders who watched the videotape. So Arruda accepted without question the fact that soccer balls play Beethoven when they're kicked and gave Nick his prize. He was thrilled.

Seventy-six percent of kids Nick's age take the chance to peek during the game, and when asked if they peeked, 95 percent lie about it.

But sometimes the researcher will read the child a short storybook before she asks about the peeking. One story read aloud is *The Boy Who Cried Wolf*—the version in which both the boy and the sheep get eaten because of his repeated lies. Alternatively, they read *George Washington and the Cherry Tree*, in which young George confesses to his father that he chopped down the prized tree with his new hatchet. The story ends with his father's reply: "George, I'm glad that you cut down the tree after all. Hearing you tell the truth instead of a lie is better than if I had a thousand cherry trees."

Now, which story do you think reduced lying more? When we surveyed 1,300 people, 75 percent thought *The Boy Who Cried Wolf* would work better. However, this famous fable actually did not cut down lying at all in Talwar's experiments. In fact, after hearing the story, kids lied even a little more than normal. Meanwhile, hearing *George Washington and the Cherry Tree*—even when Washington was replaced with a nondescript character, eliminating the potential that his iconic celebrity might influence older kids—reduced lying a sizable 43 percent in kids. Although most kids lied in the control situation, the majority hearing George Washington told the truth.

The shepherd boy ends up suffering the ultimate punishment, but the fact that lies get punished is not news to children. Increasing the threat of punishment for lying only makes children hyperaware of the potential personal cost. It distracts children from learning how their lies affect others. In studies, scholars find that kids who live in threat of consistent punishment don't lie less. Instead, they become better liars, at an earlier age—learning to get caught less often.

Ultimately, it's not fairy tales that stop kids from lying—it's the process of socialization. But the wisdom in *The Cherry Tree* applies: According to Talwar, parents need to teach kids the worth of honesty, just like George Washington's father did, as much as they need to say that lying is wrong.

The most disturbing reason children lie is that parents teach them to. According to Talwar, they learn it from us. "We don't explicitly tell them to lie, but they see us do it. They see us tell the telemarketer, 'I'm just a guest here.' They see us boast and lie to smooth social relationships."

Consider how we expect a child to act when he opens a gift he doesn't like. We instruct him to swallow all his honest reactions and put on a polite smile. Talwar runs an experiment where children play games to win a present, but when they finally receive the present, it's a lousy bar of soap. After giving the kids a moment to overcome the shock, a researcher asks them how they like it. About a quarter of preschoolers can lie that they like the gift—by elementary school, about half. Telling this lie makes them extremely uncomfortable, especially when pressed to offer a few reasons *why* they like the bar of soap. Kids who shouted with glee when they won the Peeking Game suddenly mumble quietly and fidget.

Meanwhile, the child's parent usually cheers when the child comes up with the white lie. "Often, the parents are proud that their kids are 'polite'—they don't see it as lying," Talwar remarks. She's regularly amazed at parents' seeming inability to recognize that white lies are still lies.

When adults are asked to keep diaries of their own lies, they admit to about one lie per every five social interactions, which works out to one per day, on average. The vast majority of these lies are white lies, lies to protect yourself or others, like telling the guy at work who brought in his wife's muffins that they taste great or saying, "Of course this is my natural hair color."



Encouraged to tell so many white lies and hearing so many others, children gradually get comfortable with being disingenuous. Insincerity becomes, literally, a daily occurrence. They learn that honesty only creates conflict, and dishonesty is an easy way to avoid conflict. And while they don't confuse white-lie situations with lying to cover their misdeeds, they bring this emotional groundwork from one circumstance to the other. It becomes easier, psychologically, to lie to a parent. So if the parent says, "Where did you get these Pokémon cards?! I told you, you're not allowed to waste your allowance on Pokémon cards!" this may feel to the child very much like a white-lie scenario—he can make his father *feel better* by telling him the cards were extras from a friend.

Next: The adolescent's need to withhold details.

Now, compare this with the way children are taught not to tattle. What grown-ups really mean by "Don't tell" is that we want children to learn to work it out with one another first. But tattling has received some scientific interest, and researchers have spent hours observing kids at play. They've learned that nine out of ten times, when a kid runs up to a parent to tell, that kid is being completely honest. And while it might seem to a parent that tattling is incessant, to a child that's not the case—because for every time a child seeks a parent for help, there are fourteen instances when he was wronged but did not run to the parent for aid. So when the frustrated child finally comes to tell the parent the truth, he hears, in effect, "Stop bringing me your problems!"

By the middle years of elementary school, a *tattler* is about the worst thing a kid can be called on the playground. So a child considering reporting a problem to an adult not only faces peer condemnation as a traitor but also recalls the reprimand "Work it out on your own." Each year, the problems they deal with grow exponentially. They watch other kids cut class, vandalize walls, and shoplift. To tattle is to act like a little kid. Keeping their mouth shut is easy; they've been encouraged to do so since they were little.

The era of holding back information from parents has begun.

By withholding details about their lives, adolescents carve out a social domain and identity that are theirs alone, independent from their parents or other adult authority figures. To seek out a parent for help is, from a teen's perspective, a tacit admission that he's not mature enough to handle it alone. Having to tell parents about it can be psychologically emasculating, whether the confession is forced out of him or he volunteers it on his own. It's essential for some things to be "none of your business."

The big surprise in the research is when this need for autonomy is strongest. It's not mild at 12, moderate at 15, and most powerful at 18. Darling's scholarship shows that the objection to parental authority peaks around ages 14 to 15. In fact, this resistance is slightly stronger at age 11 than at 18. In popular culture, we think of high school as the risk years, but the psychological forces driving deception surge earlier than that.

In her study of teenage students, Darling also mailed survey questionnaires to the parents of the teenagers interviewed, and it was interesting how the two sets of data reflected on each other. First, she was struck by parents' vivid fear of pushing their teens into outright hostile rebellion. "Many parents today believe the best way to get teens to disclose is to be more permissive and not set rules," Darling says. Parents imagine a trade-off between being informed and being strict. Better to hear the truth and be able to help than be kept in the dark.

Darling found that permissive parents don't actually learn more about their children's lives. "Kids who go wild and get in trouble mostly have parents who don't set rules or standards. Their parents are loving and accepting no matter what the kids do. But the kids take the lack of rules as a sign their parents don't care—that their parent doesn't really want this job of being the parent."

Pushing a teen into rebellion by having too many rules was a sort of statistical myth. "That actually doesn't happen," remarks Darling. She found that most rules-heavy parents don't actually enforce them. "It's too much work," says Darling. "It's a lot harder to enforce three rules than to set twenty rules."



A few parents managed to live up to the stereotype of the oppressive parent, with lots of psychological intrusion, but those teens weren't rebelling. They were obedient. And depressed.

"Ironically, the type of parents who are actually most consistent in enforcing rules are the same parents who are most warm and have the most conversations with their kids," Darling observes. They've set a few rules over certain key spheres of influence, and they've explained why the rules are there. They expect the child to obey them. Over life's other spheres, they supported the child's autonomy, allowing them freedom to make their own decisions.

The kids of these parents lied the least. Rather than hiding twelve areas from their parents, they might be hiding as few as five.

In the thesaurus, the antonym of *honesty* is *lying*, and the opposite of *arguing* is *agreeing*. But in the minds of teenagers, that's not how it works. Really, to an adolescent, arguing is the opposite of lying.

Next: Will how we deal with lies matter later in life?

When Nancy Darling's researchers interviewed the teenagers from Pennsylvania, they also asked the teens when and why they told the truth to their parents about things they knew their parents disapproved of. Occasionally they told the truth because they knew a lie wouldn't fly—they'd be caught. Sometimes they told the truth because they just felt obligated, saying, "They're my parents, I'm supposed to tell them." But one important motivation that emerged was that many teens told their parents the truth when they were planning on doing something that was against the rules—in hopes their parents might give in and say it was okay. Usually, this meant an argument ensued, but it was worth it if a parent might budge.

The average Pennsylvania teen was 244 percent more likely to lie than to protest a rule. In the families where there was less deception, however, there was a much higher ratio of arguing and complaining. The argument enabled the child to speak honestly. Certain types of fighting, despite the acrimony, were ultimately signs of respect—not of disrespect.

But most parents don't make this distinction in how they perceive arguments with their children. Dr. Tabitha Holmes of SUNY–New Paltz conducted extensive interviews asking mothers and adolescents, separately, to describe their arguments and how they felt about them. And there was a big difference.

Forty-six percent of the mothers rated their arguments as being destructive to their relationships with their teens. Being challenged was stressful, chaotic, and (in their perception) disrespectful. The more frequently they fought, and the more intense the fights were, the more the mother rated the fighting as harmful. But only 23 percent of the adolescents felt that their arguments were destructive. Far more believed that fighting *strengthened* their relationship with their mothers. "Their perception of the fighting was really sophisticated, far more than we anticipated for teenagers," notes Holmes. "They saw fighting as a way to see their parents in a new way, as a result of hearing their mother's point of view be articulated."

What most surprised Holmes was learning that for the teens, fighting often, or having big fights, did not cause them to rate the fighting as harmful and destructive. Statistically, it made no difference at all. Certainly, there is a point in families where there is too much conflict, Holmes notes. "But we didn't have anybody in our study with an extreme amount of conflict." Instead, the variable that seemed to really matter was how the arguments were resolved.

It will be many years before my own children become teenagers, but having lying on my radar screen has changed the way things work around the Bronson household. No matter how small, lies no longer go unnoticed. The moments slow down, and I have a better sense of how to handle them.

Just the other day, my 6-year-old son, Luke, came home from school having learned a new phrase and a new attitude—quipping "I don't care" snidely, and shrugging his shoulders to everything. He repeated "I don't care" so many times I finally got frustrated and demanded to know if someone at school had taught him this dismissive phrase.



He froze. And I could suddenly intuit the debate running through his head—should he lie to his dad, or rat out his friend? Recognizing the conflict, I told him that if he learned the phrase at school, he did not have to tell me who taught him the phrase. Telling me the truth was not going to get his friends in trouble.

“Okay,” he said, relieved. “I learned it at school.” Then he told me he did care, and he gave me a hug. I haven’t heard it again.

Does how we deal with a child’s lies really matter down the road in life? The irony of lying is that it’s both normal and abnormal behavior at the same time. It’s to be expected, and yet it can’t be disregarded.

Dr. Bella DePaulo of the University of California, Santa Barbara, has devoted much of her career to adult lying. In one study, she had both college students and community members enter a private room equipped with an audiotape recorder. Promising them complete confidentiality, DePaulo’s team instructed the subjects to recall the worst lie they ever told—with all the scintillating details.

“I was fully expecting serious lies,” DePaulo remarks. “Stories of affairs kept from spouses, stories of squandering money, or being a salesperson and screwing money out of car buyers.” And she did hear those kinds of whoppers, including theft and even one murder. But to her surprise, a lot of the stories told were about when the subject was a mere child—and they were not, at first glance, lies of any great consequence. “One told of eating the icing off a cake, then telling her parents the cake came that way. Another told of stealing some coins from a sibling.” As these stories first started trickling in, DePaulo scoffed, thinking, “C’mon, that’s the worst lie you’ve ever told?” But the stories of childhood kept coming, and DePaulo had to create a category in her analysis just for them. “I had to reframe my understanding to consider what it must have been like as a child to have told this lie,” she recalls. “For young kids, their lie challenged their self-concept that they were a good child, and that they did the right thing.”

Many subjects commented on how that momentous lie early in life established a pattern that affected them thereafter. “We had some who said, ‘I told this lie, I got caught, and I felt so badly, I vowed to never do it again.’ Others said, ‘Wow, I never realized I’d be so good at deceiving my father, I can do this all the time.’ The lies they tell early on are meaningful. The way parents react can really affect lying.”

Talwar says parents often entrap their kids, putting them in positions to lie and testing their honesty unnecessarily. Last week, I put my 3½-year-old daughter in that exact situation. I noticed she had scribbled on the dining table with a washable marker. Disapprovingly, I asked, “Did you draw on the table, Thia?” In the past, she would have just answered honestly, but my tone gave away that she’d done something wrong. Immediately, I wished I could retract the question. I should have just reminded her not to write on the table, slipped newspaper under her coloring book, and washed the ink away. Instead, I had done just as Talwar had warned against.

“No, I didn’t,” my daughter said, lying to me for the first time.

For that stain, I had only myself to blame.

Additional reporting by Ashley Merryman.

Find this article at:

<http://www.nymag.com/news/features/43893>



High Blood Pressure Pill Cuts Risk Of Parkinson's Disease

ScienceDaily (Feb. 9, 2008) — People taking a widely used group of drugs known as calcium channel blockers to treat high blood pressure also appear to be cutting their risk of Parkinson's disease, according to a new study.

The study involved 7,374 men and women over age 40. Half of the group had Parkinson's disease; the other half did not have Parkinson's disease. Among both groups, nearly half used high blood pressure medications, such as calcium channel blockers, ACE inhibitors, AT II antagonists and beta blockers.

The study found people who were currently long-term users of calcium channel blockers to treat high blood pressure lowered their risk of Parkinson's disease by 23 percent compared to people who didn't take the drugs. There was no such effect among people taking ACE inhibitors, AT II antagonists and beta blockers.

"Long-term use of calcium channel blockers was associated with a reduced risk of developing Parkinson's disease while no such association was seen for other high blood pressure medicines," said study author Christoph R. Meier, PhD, MSc, with University Hospital Basel in Switzerland.

Meier says more research is needed to determine why calcium channel blockers appear to protect against Parkinson's disease, whether this is indeed a causal association, and why the other high blood pressure medications do not offer a reduced risk.

This research was published in the February 6, 2008, online issue of *Neurology*®, the medical journal of the American Academy of Neurology.

Adapted from materials provided by [American Academy of Neurology](#).

<http://www.sciencedaily.com:80/releases/2008/02/080206163924.htm>

Chinese dance shows off its Western steps

In the huge China Now festival Chinese dance troupes will show how they have adapted a dizzying array of Western ideas



Debra Craine

In 1964 Beryl Grey became the first Western ballerina to be invited to dance with a Chinese ballet company. She was both inspired and depressed by what she found there. The dancers were wonderful and welcoming, but the poverty and deprivation they faced distressed her Western sensibilities.

And it got worse. Two years later, during the Cultural Revolution, “the dancers I had worked with were sent into the fields like peasants,” she says. “They had to plough and dig and sow; they were not allowed to be artists because artists were considered lazy and inferior.” Now, 40 years on, Grey can hardly believe how much dance in China has changed.

Today, as the Beijing Olympics prove, the country is hungry for international attention, in the arts as in business, and dance is a source of national pride. Companies regularly tour abroad, while the free exchange of ideas between East and West has expanded the Chinese artistic sensibility. Audiences are growing and new dance troupes have been formed, while the art form has forged a uniquely Chinese identity.

“We are very lucky because China is the hot point of the world at the moment,” says Zhang Changcheng, the director of the Beijing Modern Dance Company. “People want to experience the changing China, and lots of artists want to come to Beijing to work with us.”

It's a far cry from Grey's day, when dancers longed to escape their artistic isolation and Mao Zedong's favourite night out was The Red Detachment of Women, a “revolutionary model ballet” that featured ballerinas on pointe brandishing rifles. In 2008 China's dancers, like the country's musicians, are out to prove that they excel in European art forms.

This year, thanks to Britain's huge China Now arts festival, Chinese dance will be on display as never before. The National Ballet, in a summer season at the Royal Opera House, will show how it's preserving Russian classical traditions while developing new ones of its own. The Beijing Modern Dance Company, which makes its British debut at the same venue on Thursday, will show how Eastern philosophy and Western contemporary style can inhabit the same choreography.

Meanwhile, cross-cultural collaborations will highlight how China is seeking fresh ideas from the West. Sidi Larbi Cherkaoui, the Belgian choreographer, has been working with the sculptor Antony Gormley and monks from the Shaolin Temple for his new piece, Sutra (which has its premiere at Sadler's Wells in



May), while the British choreographer Akram Khan has joined forces with dancers from the National Ballet to create *Bahok*. The latter, which opens at the Liverpool Playhouse next month, will undertake an extensive British tour.

For Khan, the time spent choreographing in China was a creative buzz. "It's been very exciting because they come from such a different perspective," he says. "The National Ballet dancers are extremely lyrical and extremely athletic. And even when the vocabulary is the same, the movement is not. That sense of chaos on the outside but a very calm stillness within the body: I find that very Asian, and I'm always searching for it within myself."

Calm or not, the Chinese dancers (there are three of them working alongside five from Khan's own London company) were thrown by rehearsing with such an unorthodox talent. "They wondered where it was going, partly because they are the writers of the show, and that's new for them. They found having to speak a strange experience." All the text in *Bahok* comes from the dancers, from their stories of their homes, because the piece is about the search for origin in an increasingly fractured world. "It's all about that feeling of travelling from one place to another," Khan says. "In order to know where you are going, you have to know where you are from."

Cherkaoui, whose Chinese project has been even more unconventional, has nothing but praise for the experience. "Working in China feels like a way of discovering another part of myself," he says. For *Sutra*, "which is filled with poetic imagery of how human or animal life goes from beginning to end", he is collaborating with 15 young Buddhist monks, all of them kung fu experts. "Their movements relate to animals such as the preying mantis, the snake or the monkey, so they are quite similar to some of my movements, which also relate to animals. But I am going to learn a lot because they perceive movement so differently. They consider their body and their environment one thing, which is not the way we consider it in the West."

When he first arrived at the Shaolin Temple (about 90 minutes south of Beijing) last year, Cherkaoui found his preconceptions about life in their closed religious community overturned. "I was surprised to see them walking around with mobile phones and listening to pop music. They have movement patterns that are 750 years old but they are clearly living in China today. And they are very open-minded. They want to communicate and share their knowledge with the world; otherwise they wouldn't have let me in."

Letting in the West has become easier as China's international status increases. "Every year the Beijing Modern Dance Company invites different choreographers from the US and Europe to come to China and work with us," Zhang says. "We try not to follow any other country, but collaboration encourages the dancers to be more open-minded, which allows them to develop their own identity." His troupe, which trains in t'ai chi and Peking Opera techniques as well as Western styles, uses traditional and contemporary elements in its choreography.

The way his company is run also reflects the new thinking in China. The first thing Zhang did when he took over in 1998 (three years after the company was founded) was to make BMDC independent of government. His decision, unprecedented on the Chinese arts scene, made it much tougher to run the company but gave it more artistic freedom. "I told the dancers that we are wild animals. No one can give us food, no one can take care of us. We must catch the rabbit if we want to eat." The only way his troupe survives is through the performance fees it earns on foreign tours.

His dancers, he says, barely earn a living wage because, despite China's tiger economy, there is very little money around for the contemporary arts. A few Chinese dancers (especially of the ballet variety) find jobs in Europe and North America, but it's still difficult for them to surmount the immigration hurdles.

"To be a dancer is to be very poor in China," Zhang says. "My country has developed very fast economically, but it needs time to develop a real culture of contemporary performing arts. Most of the audience is only interested in classical art. What's the fashion? To get dressed up and watch *Swan Lake* in a big theatre."



Ironically, the National Ballet of China (the company with which Grey danced) opens its Covent Garden season on July 28 with its new *Swan Lake*, staged for the company by Natalia Makarova, the migr Russian ballerina (with sets by the British designer Peter Farmer). But it will also perform *Raise the Red Lantern*, a ballet based on the hit Chinese film directed by Zhang Yimou, who also directed the dance adaptation. It had its British premiere at Sadler's Wells in 2003, and was so successful that the company felt confident enough to bring it back.

An intense and tragic tale that examines the role of women under feudalism in 1930s China, *Raise the Red Lantern* represented a landmark in the history of the 50-year-old Beijing company. Daring to blend ballet and traditional Chinese dance, it sparked controversy and debate outside the narrow confines of the theatre. The film-maker himself was quick to declare it a harbinger for the future of ballet in China.

Zhang Changcheng's 14-strong company, which exists at the other end of the dance spectrum, has an even longer journey to make. "There is lots of entertainment in China," he says, "but the arts are not so healthy. Right now commerce, entertainment and art are too mixed up together. Some people are getting very rich in the new China, but they don't yet have a soul. When enough people have enough money they will start thinking about their souls. Maybe then they will go to a gallery, go to a museum or come see modern dance. They just need time."

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THE BEST DANCE AT CHINA NOW

Beijing Modern Dance Company China's leading modern dance troupe makes its British debut with a double bill of works inspired by Eastern philosophy and Peking Opera. Linbury Theatre, Royal Opera House (020-7304 4000), Feb 14-16.

Bahok The British choreographer Akram Khan's collaboration with dancers from the National Ballet of China. Opens at the Liverpool Playhouse (0151-709 4776) on March 7; then touring to July 9, including Sadler's Wells (0844 4124300), June 11-14.

Sutra Sidi Larbi Cherkaoui choreographs for the kung fu masters at the Shaolin Temple. Sadler's Wells (0844 4124300), May 27-31.

Dick Wong A look at one of Hong Kong's most prominent contemporary choreographers. Lilian Baylis, Sadler's Wells (0844 4124300), May 30.

Sang Jijia Tibet's first professional modern dancer performs his own work. Lilian Baylis, Sadler's Wells (0844 4124300), June 6.

One Thousand Hands Bodhisattva, the 21 hearing-impaired dancers of the China Disabled People's Performing Art Troupe produce perfectly timed and choreographed arm movements. Touring various venues (020-7553 7180), June 1-14.

Liu Qi The deputy artistic director of Guangdong Modern Dance Company visits the UK Britain to work with dancers here. Lilian Baylis Theatre, Sadler's Wells (0844 4124300), June 13, 14.

National Ballet of China China's flagship company brings its new *Swan Lake* (staged by Natalia Makarova) and *Raise the Red Lantern*, based on the famous film. Royal Opera House (020- 7304 4000), July 28 to Aug 2.

http://entertainment.timesonline.co.uk/tol/arts_and_entertainment/stage/dance/article3335748.ece



***Educational television a myth, doctor warns***

KATE KELLAND

Reuters

February 12, 2008 at 1:10 PM EST

LONDON — He has been characterized as the ultimate killjoy, the extremist fringe thinker who refuses to recognize the realities of modern life.

But for Dr. Aric Sigman, an American psychologist living in Britain and the author of *Remotely controlled; How Television is Damaging Our Lives*, the battle against what he calls the "recreational junk food" of TV is one well worth fighting.

And as the British Broadcasting Corporation announced on Tuesday the launch of the nation's first television quiz show for pre-school children, Dr. Sigman's frustration with TV executives who say they are both entertaining and educating children is growing.

"Television-makers will always justify themselves by saying that children enjoy their programs," Dr. Sigman told Reuters in an interview. "They say they make children smile and laugh."

"But children will also smile if you give them cocaine. The argument that children enjoy something or laugh at something is not the basis on which you decide what is good for them."

The BBC's new show, *Kerwhizz*, which it describes as a "new breakthrough multiplatform entertainment format" aimed at four-to-six-year-olds, is a perfect example, Dr. Sigman said, attacking another common claim by television makers: Their programs are educational.

"The phrase 'educational television' was, of course, invented by people who make television," he said. "To me it's an oxymoron."

According to Dr. Sigman, who bases his assertions on studies published by researchers from leading U.S. universities as well as his own worldwide research, science now suggests that the quality of television children watch is of little consequence.

He points to *Tellytubbies*, the globally successful toddler TV series hailed for its innovation and educational value, but which was also the subject of several warning studies including one by two Harvard academics titled "Say No To Tellytubbies."

"Medical evidence is growing that for young children, being exposed to TV, computers and DVDs, — irrespective of the quality of the program — has an impact on their health and development," he said.

"There is a definite inverse relationship between time spent watching any kind of television or screen when you are young and your ability to read and concentrate when you are older."

With the BBC billing its new pre-school quiz as being "visually stunning and packed with gags" and adding that it was "designed with the assistance of teachers," Dr. Sigman bemoans a lack of confidence among parents and others responsible for child care in their own ability to entertain and engage children.

Studies of brain activity have shown that a child doing simple mental arithmetic with coloured counters or beans has greater blood flow to the brain than one engaged what may look like a far more complex computer game, he said.



And it may be precisely the complexity – the speed of edits, the colours and sounds and speeds children's media – that is having a detrimental effect on their brain development.

"It may well be that your child learns from the TV that a certain country is in Africa, but that may well also come at the cost of doing something to their attention span," he said.

"Whereas if a parent is talking their children about geography or nature, they can learn without that risk and will physically exercise their brains in the process."

Dr. Sigman has a TV at home – only one – that his children watch occasionally, but he insists that society is wrong to chastise as "kill-joys" the relatively few parents who ban television altogether, or allow only a few hours a week.

"My children have candy sometimes, and television is just like candy, it's recreational junk food," he said. "But it's a complete myth that children somehow inherently need TV – otherwise they would be born with a television built into their stomachs, just like the Tellytubbies."

<http://www.theglobeandmail.com:80/servlet/story/RTGAM.20080212.wtvkids0212/BNSStory/Entertainment/?page=rss&id=RTGAM.20080212.wtvkids0212>



At Harvard, a Proposal to Publish Free on Web

By PATRICIA COHEN

Publish or perish has long been the burden of every aspiring university professor. But the question the Harvard faculty will decide on Tuesday is whether to publish — on the Web, at least — free.

Faculty members are scheduled to vote on a measure that would permit Harvard to distribute their scholarship online, instead of signing exclusive agreements with scholarly journals that often have tiny readerships and high subscription costs.

Although the outcome of Tuesday's vote would apply only to Harvard's arts and sciences faculty, the impact, given the university's prestige, could be significant for the open-access movement, which seeks to make scientific and scholarly research available to as many people as possible at no cost.

"In place of a closed, privileged and costly system, it will help open up the world of learning to everyone who wants to learn," said Robert Darnton, director of the university library. "It will be a first step toward freeing scholarship from the stranglehold of commercial publishers by making it freely available on our own university repository."

Under the proposal Harvard would deposit finished papers in an open-access repository run by the library that would instantly make them available on the Internet. Authors would still retain their copyright and could publish anywhere they pleased — including at a high-priced journal, if the journal would have them.

What distinguishes this plan from current practice, said Stuart Shieber, a professor of computer science who is sponsoring the faculty motion, is that it would create an "opt-out" system: an article would be included unless the author specifically requested it not be. Mr. Shieber was the chairman of a committee set up by Harvard's provost to investigate scholarly publishing; this proposal grew out of one of the recommendations, he said.

The publishing industry, as well as some scholarly groups, have opposed some forms of open access, contending that free distribution of scholarly articles would ultimately eat away at journals' value and wreck the existing business model. Such a development would in turn damage the quality of research, they argue, by allowing articles that have not gone through a rigorous process of peer review to be broadcast on the Internet as easily as a video clip of Britney Spears's latest hairdo. It would also cut into subsidies that some journals provide for educational training and professional meetings, they say.

J. Lorand Matory, a professor of anthropology and African and African American studies at Harvard, said he sympathized with the goal of bringing down the sometimes exorbitant price of scientific periodicals, but worried that a result would be to eliminate a whole range of less popular journals that are subsidized by more profitable ones.

Art history periodicals, for example, are extremely expensive to publish because of the reproduction costs, and subscriptions pay for those as well as some of the discipline's annual gatherings.

Professor Matory also pointed out that "any professor who wants to put his or her article up online can."

Asked about the Harvard proposal, Allan Adler, vice president for legal and governmental affairs at the Association of American Publishers, said that mandates are what publishers object to, as when Congress required that any work financed by the National Institutes for Health be funneled through PubMed Central, an open-access repository maintained by the National Library of Medicine.

"As long as they leave the element of choice for authors and publishers," he said, "there isn't a problem."



Supporters of open access say that the current system creates a different set of problems for academics. Expensive journals cut into a library's budget for scholarly books and monographs, which hurts academic publishers, which hurts the coming generation of scholars who must publish to gain tenure.

Professor Shieber also doubts that free distribution would undermine the journal industry. "We don't know if that would happen," he said. "There is little evidence to support that it would." Nearly all scholarly articles on physics have been freely available on the Internet for more than a decade, he added, and physics journals continue to thrive.

As for the vote, Professor Shieber said: "As far as I know, everyone I've ever talked to is supportive of the underlying principle. Still there is a difference between an underlying principle and specific proposal."

<http://www.nytimes.com/2008/02/12/books/12publ.html?ex=1360472400&en=2f1a74d43c670e0f&ei=5088&partner=rssnyt&emc=rss>

One Of Youngest And Brightest Galaxies Ever Seen



ScienceDaily (Feb. 13, 2008) — The NASA/ESA Hubble Space Telescope, with a boost from a natural “zoom lens”, has found the strongest evidence so far for a galaxy with a redshift significantly above 7. It is likely to be one of the youngest and brightest galaxies ever seen right after the cosmic “dark ages”, just 700 million years after the beginning of our Universe (redshift ~ 7.6).

Detailed images from Hubble’s Near Infrared Camera and Multi-Object Spectrometer (NICMOS) reveal an infant galaxy, dubbed A1689-zD1, undergoing a firestorm of star birth as it comes out of the dark ages, a time shortly after the Big Bang, but before the first stars completed the reheating of the cold, dark Universe. Images from NASA’s Spitzer Space Telescope’s Infrared Array Camera provided strong additional evidence that it was a young star-forming galaxy in the dark ages.

“We certainly were surprised to find such a bright young galaxy 13 billion years in the past”, said astronomer Garth Illingworth of the University of California, Santa Cruz, USA and a member of the research team. “This is the most detailed look to date at an object so far back in time.”

According to the authors, the measurements are “highly reliable”. “This object is the strongest candidate for the most distant galaxy so far”, states team member Piero Rosati from ESO, Germany.

“The Hubble images yield insight into the galaxy’s structure that we cannot get with any other telescope,” added astronomer Rychard Bouwens of the University of California, Santa Cruz, one of the co-discoverers of this galaxy.

The new images should offer insights into the formative years of galaxy birth and evolution and yield information on the types of objects that may have contributed to ending the dark ages. During its lifetime the Hubble telescope has peered ever farther back in time, viewing galaxies at successively younger stages of evolution. These snapshots have helped astronomers create a scrapbook of galaxies from infancy



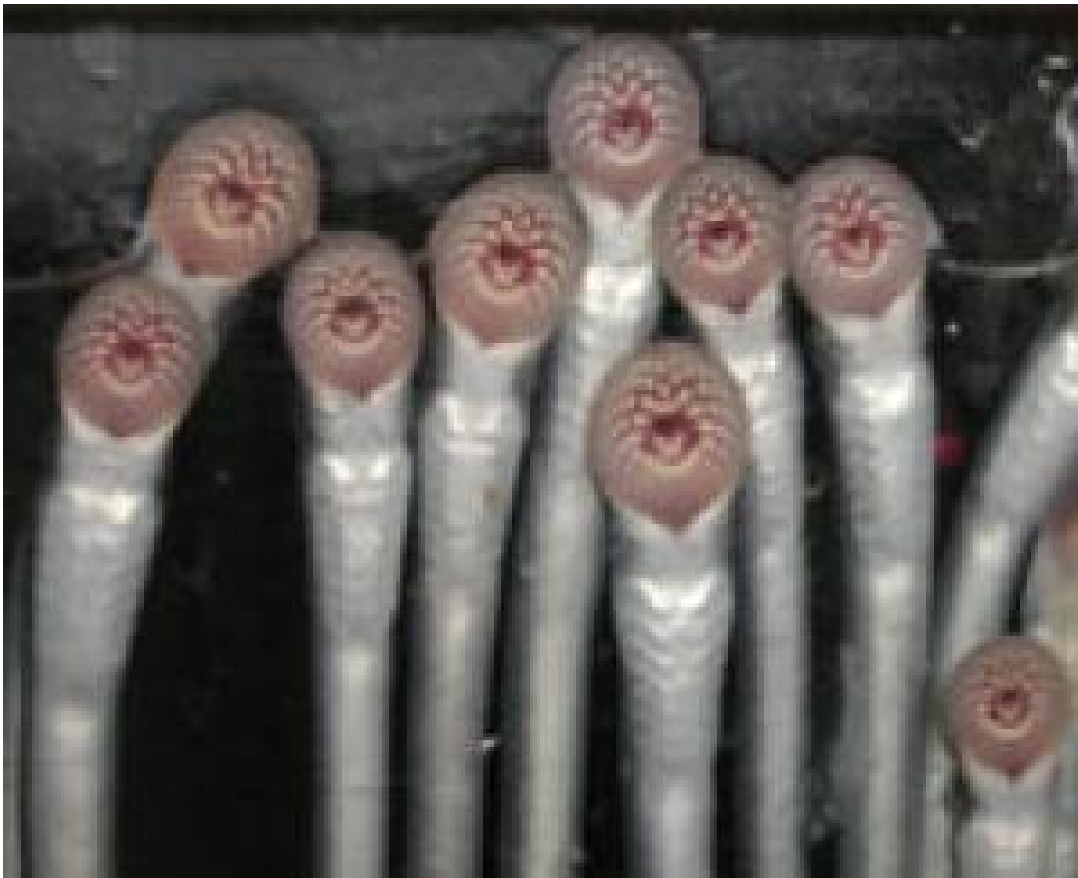
to adulthood. The new Hubble and Spitzer images of A1689-zD1 show a time when galaxies were in their infancy.

Current theory holds that the dark ages began about 400,000 years after the Big Bang, as matter in the expanding Universe cooled and formed clouds of cold hydrogen. These cold clouds pervaded the Universe like a thick fog. At some point during this era, stars and galaxies started to form. Their collective light heated and cleared the fog of cold hydrogen, and ended the dark ages about a billion years after the Big Bang.

“This galaxy presumably is one of the many galaxies that helped end the dark ages”, said astronomer Larry Bradley of Johns Hopkins University in Baltimore, USA, and leader of the study. “Astronomers are fairly certain that high-energy objects such as quasars did not provide enough energy to end the dark ages of the Universe. But

<http://www.sciencedaily.com/releases/2008/02/080212095443.htm>

'Junk DNA' Can Explain Origin And Complexity Of Vertebrates, Study Suggests



*The Sea Lamprey (*Petromyzon marinus*). (Credit: Photo by courtesy of J. Ellen Marsden, University of Vermont)*

ScienceDaily (Feb. 13, 2008) — Dartmouth College researchers and colleagues from the University of Bristol in the U.K. have traced the beginnings of complex life, i.e. vertebrates, to microRNA, sometimes referred to as 'junk DNA.' The researchers argue that the evolution of microRNAs, which regulate gene expression, are behind the origin of early vertebrates.

Vertebrates - animals such as humans that possess a backbone - are the most anatomically and genetically complex of all organisms, but explaining how they achieved this complexity has vexed scientists since the conception of evolutionary theory.

The team studied the genomics of primitive living fishes, such as sharks and lampreys, and their spineless relatives, like the sea squirt. By reconstructing the acquisition history of microRNAs shared between human and mice, the researchers determined that the highest rate of microRNA innovation in the vertebrate lineage occurred before the divergence between the living jawless fishes like the lamprey and the jawed fishes like the shark, but after the divergence of vertebrates from their invertebrate chordate relatives, such as the sea squirt.

Alysha Heimberg of Dartmouth College and her colleagues showed that microRNAs, a class of tiny molecules only recently discovered residing within what has usually been considered 'junk DNA', are hugely diverse in even the most lowly of vertebrates, but relatively few are found in the genomes of our invertebrate relatives.

She explained: "There was an explosive increase in the number of new microRNAs added to the genome of vertebrates and this is unparalleled in evolutionary history."



Co-author, Dr Philip Donoghue of Bristol University's Department of Earth Sciences continued: "Most of these new genes are required for the growth of organs that are unique to vertebrates, such as the liver, pancreas and brain. Therefore, the origin of vertebrates and the origin of these genes is no coincidence."

Dr Kevin Peterson of Dartmouth College said: "This study not only points the way to understanding the evolutionary origin of our own lineage, but it also helps us to understand how our own genome was assembled in deep time."

Journal reference: MicroRNAs and the advent of vertebrate morphological complexity by Alysha M. Heimberg, Lorenzo F. Sempere, Vanessa N. Moy, Philip C. J. Donoghue and Kevin J. Peterson will be published online on February 11-15 in PNAS.

This work was funded by the National Science Foundation, and the National Endowment for Science, Technology and the Arts.

Adapted from materials provided by University of Bristol.

<http://www.sciencedaily.com/releases/2008/02/080211172609.htm>

Lake Mead, Key Water Source For Southwestern US, Could Be Dry By 2021



Lake Mead at Hoover Dam, October, 2007. According to Scripps researchers, Lake Mead could be dry by 2021 if climate changes as expected and future water usage is not curtailed. (Credit: Photo courtesy of Dr. Ken Dewey, Applied Climate Sciences Group, University of Nebraska, Lincoln.)

ScienceDaily (Feb. 12, 2008) — There is a 50 percent chance Lake Mead, a key source of water for millions of people in the southwestern United States, will be dry by 2021 if climate changes as expected and future water usage is not curtailed, according to a pair of researchers at Scripps Institution of Oceanography, UC San Diego.

Without Lake Mead and neighboring Lake Powell, the Colorado River system has no buffer to sustain the population of the Southwest through an unusually dry year, or worse, a sustained drought. In such an event, water deliveries would become highly unstable and variable, said research marine physicist Tim Barnett and climate scientist David Pierce.

Barnett and Pierce concluded that human demand, natural forces like evaporation, and human-induced climate change are creating a net deficit of nearly 1 million acre-feet of water per year from the Colorado River system that includes Lake Mead and Lake Powell. This amount of water can supply roughly 8 million people. Their analysis of Federal Bureau of Reclamation records of past water demand and calculations of scheduled water allocations and climate conditions indicate that the system could run dry even if mitigation measures now being proposed are implemented.

“We were stunned at the magnitude of the problem and how fast it was coming at us,” said Barnett. “Make no mistake, this water problem is not a scientific abstraction, but rather one that will impact each and every one of us that live in the Southwest.”

“It’s likely to mean real changes to how we live and do business in this region,” Pierce added.

The Lake Mead/Lake Powell system includes the stretch of the Colorado River in northern Arizona. Aqueducts carry the water to Las Vegas, Los Angeles, San Diego, and other communities in the Southwest. Currently the system is only at half capacity because of a recent string of dry years, and the team estimates that the system has already entered an era of deficit.

“When expected changes due to global warming are included as well, currently scheduled depletions are simply not sustainable,” wrote Barnett and Pierce in the paper.



Barnett and Pierce note that a number of other studies in recent years have estimated that climate change will lead to reductions in runoff to the Colorado River system. Those analyses consistently forecast reductions of between 10 and 30 percent over the next 30 to 50 years, which could affect the water supply of between 12 and 36 million people.

The researchers estimated that there is a 10 percent chance that Lake Mead could be dry by 2014. They further predict that there is a 50 percent chance that reservoir levels will drop too low to allow hydroelectric power generation by 2017.

The researchers add that even if water agencies follow their current drought contingency plans, it might not be enough to counter natural forces, especially if the region enters a period of sustained drought and/or human-induced climate changes occur as currently predicted.

Barnett said that the researchers chose to go with conservative estimates of the situation in their analysis, though the water shortage is likely to be more dire in reality. The team based its findings on the premise that climate change effects only started in 2007, though most researchers consider human-caused changes in climate to have likely started decades earlier. They also based their river flow on averages over the past 100 years, even though it has dropped in recent decades. Over the past 500 years the average annual flow is even less.

“Today, we are at or beyond the sustainable limit of the Colorado system. The alternative to reasoned solutions to this coming water crisis is a major societal and economic disruption in the desert southwest; something that will affect each of us living in the region” the report concluded.

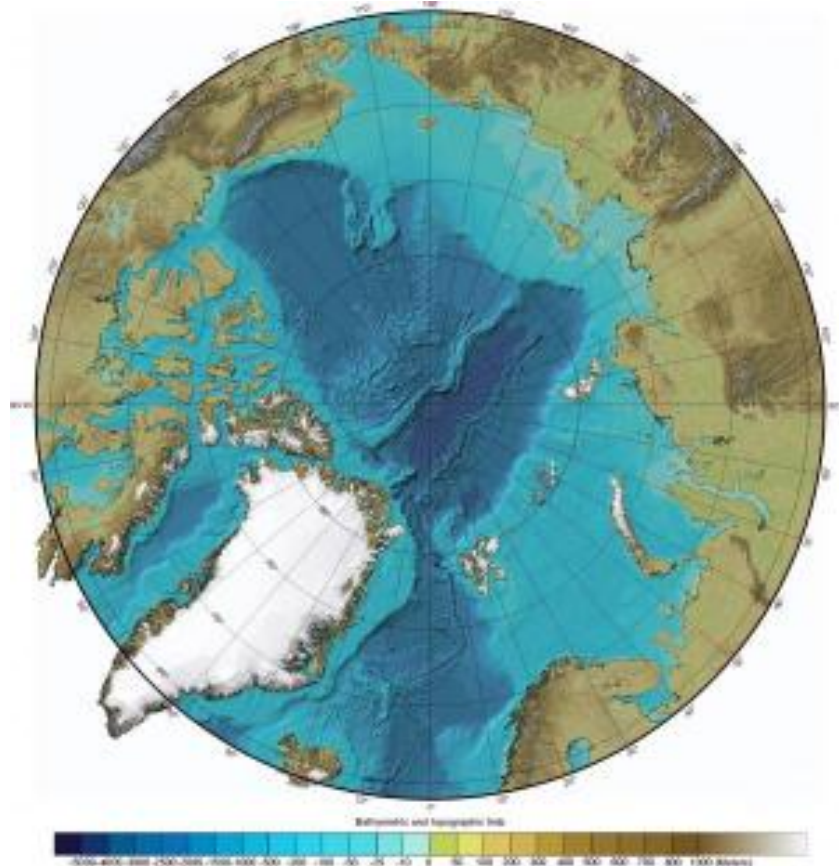
The paper, “When will Lake Mead go dry?” has been accepted for publication in the peer-reviewed journal *Water Resources Research*, published by the American Geophysical Union (AGU), and is accessible via the AGU’s website.

The research was supported under a joint program between UC San Diego and the Lawrence Livermore National Laboratory and by the California Energy Commission. The views expressed here do not necessarily represent the views of the California Energy Commission, its employees, or the state of California.

Adapted from materials provided by University of California, San Diego.

<http://www.sciencedaily.com/releases/2008/02/080212141424.htm>

Continental Slope Off Alaska 100 Nautical Miles Further Off Coast Than Assumed



International Bathymetric Chart of the Arctic Ocean. Chukchi Borderland is between 160W and 170W degrees longitude and 75N and 80N degrees latitude. (Credit: UNH/NOAA)

ScienceDaily (Feb. 12, 2008) — New Arctic sea floor data just released by the University of New Hampshire and the National Oceanic and Atmospheric Administration suggests that the foot of the continental slope off Alaska is more than 100 nautical miles farther from the U.S. coast than previously assumed. The data, gathered during a recent mapping expedition to the Chukchi Cap some 600 nautical miles north of Alaska, could support U.S. rights to natural resources of the sea floor beyond 200 nautical miles* from the coast.

"We found evidence that the foot of the slope was much farther out than we thought," said Larry Mayer, expedition chief scientist and co-director of the Joint Hydrographic Center at UNH. "That was the big discovery."

Coastal nations have sovereign rights over the natural resources of their continental shelf, generally recognized to extend 200 nautical miles out from the coast. The Law of the Sea Convention, now under consideration in the U.S. Senate, provides nations an internationally recognized basis to extend their sea floor resource rights beyond the foot of the continental slope if they meet certain geological criteria backed up by scientific data.

The Bush administration supports approval of the convention. The Arctic mapping expedition, conducted between Aug. 17 and Sept. 15, 2007 aboard the U.S. Coast Guard Cutter Healy, employed sophisticated echo sounders to survey this relatively unexplored region, providing much finer-grained data and images than existed previously.

"We now have a better geologic picture of what's happening in that area of the Arctic," said NOAA Office of Coast Survey researcher Andy Armstrong, co-chief scientist on the expedition and NOAA co-



director of the Joint Hydrographic Center. "These are valuable data for NOAA and the United States, and I'm pleased that we're making them available for anyone to use."

Mapping more than 5,400 linear nautical miles, the research team also found scours on the Chukchi Cap some 1,300 feet below the surface, likely caused by the scraping of an ice sheet on the sea floor, and deep pockmarks of unknown origin at a depth of 1,600 feet.

"The sea floor is full of mysteries, and beneath the Arctic ice cap those mysteries are even harder to reveal," said Mayer. "The kind of full-coverage, high-resolution mapping we do provides critical insight for meeting the criteria of the Law of the Sea Convention as well as the geologic history of the region."

Prior to this work, the only seafloor mapping data available in the ice-covered Arctic came mostly from ice islands and helicopters. These sparse individual measurements produced low-resolution maps compared to the Joint Hydrographic Center's mapping.

Other mapping expeditions led by the Joint Hydrographic Center, a NOAA-UNH partnership, have explored the Bering Sea (2003), the Atlantic coast of the U.S. (2004 and 2005), the Gulf of Alaska (2005), Mariana Islands (2006 and 2007), and the Gulf of Mexico (2007).

"Understanding the bathymetry and geological history of the Arctic is an important part of understanding global climate change," said Mayer. "The Arctic acts as a global spigot in controlling the flow of deep ocean currents that distribute the Earth's heat and control climate. The Arctic is the canary in the coal mine."

* One nautical miles equals 1.15 statute miles or 1852 meters.

Adapted from materials provided by University of New Hampshire.

<http://www.sciencedaily.com/releases/2008/02/080211134449.htm>

Global Warming: Sea Level Rise Could Be Twice As High As Current Projections, Greenland Ice Sheet Study Suggests



This 1946 picture shows how the four-mile-wide Jakobshavn Isbrae, the white region in the middle, is flowing from the ice (top) through Greenland's rocky coast. (Credit: Image courtesy of University at Buffalo)

ScienceDaily (Feb. 12, 2008) — A comprehensive new study authored by University at Buffalo scientists and their colleagues for the first time documents in detail the dynamics of parts of Greenland's ice sheet, important data that have long been missing from the ice sheet models on which projections about sea level rise and global warming are based.

The research also demonstrates how remote sensing and digital imaging techniques can produce rich datasets without field data in some cases.

Traditionally, ice sheet models are very simplified, according to Beata Csatho, Ph.D., assistant professor of geology in the UB College of Arts and Sciences and lead author of the paper.*

"Ice sheet models usually don't include all the complexity of ice dynamics that can happen in nature," said Csatho. "This research will give ice sheet modelers more precise, more detailed data."

The implications of these richer datasets may be dramatic, Csatho said, especially as they impact climate projections and sea-level rise estimates, such as those made by the United Nations Intergovernmental Panel on Climate Change (IPCC).

"If current climate models from the IPCC included data from ice dynamics in Greenland, the sea level rise estimated during this century could be twice as high as what they are currently projecting," she said.

The paper focuses on Jakobshavn Isbrae, Greenland's fastest moving glacier and its largest, measuring four miles wide.



During the past decade, Jakobshavn Isbrae has begun to experience rapid thinning and doubling of the amount of ice it discharges into Disko Bay.

"Although the thinning started as early as the end of the 18th century, the changes we are seeing now are bigger than can be accounted for by normal, annual perturbations in climate," Csatho said.

In order to document the most comprehensive story possible of the behavior of Jakobshavn Isbrae since the Little Ice Age in the late 1800s, Csatho and her colleagues at Ohio State University, the University of Kansas and NASA used a combination of techniques.

These included field mapping, remote sensing, satellite imaging and the application of digital techniques in order to glean "hidden" data from historic aerial photographs as many as 60 years after they were taken.

By themselves, Csatho explained, the two-dimensional pictures were of limited value.

"But now we can digitize them, removing the boundaries between them and turning several pictures into a single 'mosaic' that will produce one data set that can be viewed in three-dimensions," she said.

"By reprocessing old data contained in these old photographs and records, we have been able to construct a long-term record of the behavior of the glacier," said Csatho. "This was the first time that the data from the '40s could be reused in a coherent way."

The data from the historic photos were combined with data from historical records, ground surveys, field mapping and measurements taken from the air to document important signs of change in the glacier's geometry.

Csatho explained that conventional methods of assessing change in glaciers have depended on documenting "iceberg calving," in which large pieces at the front of the glacier break off.

"But we found that you can get significant changes in the ice sheet without seeing a change in front," she said.

Other key findings of the paper are that two different parts of the same glacier may behave quite differently and that a glacier does not necessarily react to climate change as a single, monolithic entity.

"Climate forces are complex," Csatho said. "For example, we found that the northern part of Jakobshavn was still thinning while the climate was colder between the 1960s and the 1990s."

Csatho, who is a geophysicist, added that the research is the result of a strong interdisciplinary team involving experts in glaciology, ice sheet modeling and photogrammetry, the science of making measurements based on photographs.

This research was published online in February 2008 in the Journal of Glaciology. Csatho's co-authors on the paper are Tony Schenk of the Ohio State University Department of Civil and Environmental Engineering and Geodetic Science; Kees van der Veen of the Center for Remote Sensing of Ice Sheets at the University of Kansas, and William B. Krabill of the National Aeronautics and Space Administration's Cryospheric Sciences Branch.

The research was funded by the National Science Foundation and NASA.

Adapted from materials provided by [University at Buffalo](http://www.scienceatbuffalo.edu).

<http://www.sciencedaily.com/releases/2008/02/080211172517.htm>



Human Skin Cells Reprogrammed Into Embryonic Stem Cells



Kathrin Plath. UCLA stem cell scientists have reprogrammed human skin cells into cells with the same unlimited properties as embryonic stem cells without using embryos or eggs. (Credit: Image courtesy of University of California - Los Angeles)

ScienceDaily (Feb. 12, 2008) — UCLA stem cell scientists have reprogrammed human skin cells into cells with the same unlimited properties as embryonic stem cells without using embryos or eggs.

Led by scientists Kathrin Plath and William Lowry, UCLA researchers used genetic alteration to turn back the clock on human skin cells and create cells that are nearly identical to human embryonic stem cells, which have the ability to become every cell type found in the human body. Four regulator genes were used to create the cells, called induced pluripotent stem cells or iPS cells.

The implications for disease treatment could be significant. Reprogramming adult stem cells into embryonic stem cells could generate a potentially limitless source of immune-compatible cells for tissue engineering and transplantation medicine. A patient's skin cells, for example, could be reprogrammed into embryonic stem cells. Those embryonic stem cells could then be prodded into becoming various cell types -- beta islet cells to treat diabetes, hematopoietic cells to create a new blood supply for a leukemia patient, motor neuron cells to treat Parkinson's disease.

"Our reprogrammed human skin cells were virtually indistinguishable from human embryonic stem cells," said Plath, an assistant professor of biological chemistry, a researcher with the Eli and Edythe Broad Center of Regenerative Medicine and Stem Cell Research and lead author of the study. "Our findings are an important step towards manipulating differentiated human cells to generate an unlimited supply of patient specific pluripotent stem cells. We are very excited about the potential implications."

The UCLA study confirms the work first reported in late November of researcher Shinya Yamanaka at Kyoto University and James Thomson at the University of Wisconsin. The UCLA research appears Feb. 11, 2008, in an early online edition of the journal *Proceedings of the National Academy of the Sciences*. The UCLA work was completed at about the same time the Yamanaka and Thomson reports were published. Taken together, the studies demonstrate that human iPS cells can be easily created by different laboratories and are likely to mark a milestone in stem cell-based regenerative medicine, Plath said.

These new techniques to develop stem cells could potentially replace a controversial method used to reprogram cells, somatic cell nuclear transfer (SCNT), sometimes referred to as therapeutic cloning. To date, therapeutic cloning has not been successful in humans. However, top stem cell scientists worldwide stress that further research comparing these reprogrammed cells with stem cells derived from embryos,



considered the gold standard, is necessary. Additionally, many technical problems, such as the use of viruses to deliver the four genes for reprogramming, need to be overcome to produce safe iPS cells that can be used in the clinic.

"Reprogramming normal human cells into cells with identical properties to those in embryonic stem cells without SCNT may have important therapeutic ramifications and provide us with another valuable method to develop human stem cell lines," said Lowry, an assistant professor of molecular, cell and developmental biology, a Broad Stem Cell Center researcher and first author of the study. "It is important to remember that our research does not eliminate the need for embryo-based human embryonic stem cell research, but rather provides another avenue of worthwhile investigation."

The combination of four genes used to reprogram the skin cells regulate expression of downstream genes and either activate or silence their expression. The reprogrammed cells were not just functionally identical to embryonic stem cells. They also had identical biological structure, expressed the same genes and could be coaxed into giving rise to the same cell types as human embryonic stem cells.

The UCLA research team included four young scientists recruited to UCLA's new stem cell center in the wake of the passage of Proposition 71 in 2004, which created \$3 billion in funding for embryonic stem cell research. The scientists were drawn to UCLA in part because of California's stem cell research friendly atmosphere and the funding opportunities created by Proposition 71. In addition to Plath and Lowry, the team included Amander Clarke, an assistant professor of molecular, cell and developmental biology, and April Pyle, an assistant professor of microbiology, immunology and molecular genetics.

The creation of the human iPS cells is an extension of Plath's work on mouse stem cell reprogramming. Plath headed up one of three research teams that were able to successfully reprogram mouse skin cells into mouse embryonic stem cells. That work appeared in the June 2007 issue of the journal *Cell*.

<http://www.sciencedaily.com/releases/2008/02/080211172631.htm>

Very Young Found To Process Fear Memories In Unique Way



Very young brains process memories of fear differently than more mature ones, new research indicates. The work significantly advances scientific understanding of when and how fear is stored and unlearned, and introduces new thinking on the implications of fear experience early in life. (Credit: iStockphoto)

ScienceDaily (Feb. 13, 2008) — Very young brains process memories of fear differently than more mature ones, new research indicates. The work significantly advances scientific understanding of when and how fear is stored and unlearned, and introduces new thinking on the implications of fear experience early in life.

"This important paper raises questions that are the 'tip of the iceberg' related to the very complex series of events that occur as we learn to fear something. In the real world, we become fearful, extinguish that fear, reacquire it at another time, and then conquer it yet again," says John Krystal, MD, of Yale University and director of the clinical neuroscience division of the VA National Center for Post-Traumatic Stress Disorder. "Typically, we think about long-term, negative impact of fear learning, such as lifelong problems with anxiety. But this work highlights an avenue for adapting to early stresses that apparently can occur only early in life: to erase a learned fear from memory." Krystal was not affiliated with the research.

Study co-authors Jee Hyun Kim and Rick Richardson, PhD, of the University of New South Wales in Sydney, homed in on the amygdala, using anesthesia to temporarily inactivate it and therefore isolate its role. The amygdala is critical for emotional learning and plays a central role in dulling the memory of a fear.

Kim and Richardson trained rats that were 16 and 23 days old--the human equivalent of children and budding adolescents--to associate a specific sound with a mild shock to the foot. After subsequent



training, when the sound was not followed by a shock, the animals' fearful reaction to hearing the sound faded. Technically, this is known as "extinction," and depended on the function of the amygdala.

In a second round of training, the researchers reintroduced the fear and tried to re-extinguish it. This time around, they found, only the older rats were able to do so without the amygdala.

The researchers concluded that the age at which the initial extinction training occurred was critical to whether or not the rats' fear faded the second time independently of the amygdala. The authors suggest that in the very young, it is primarily the amygdala that extinguishes fearful memories, but that mechanisms independent of the amygdala develop later.

This raises the possibility that fears unlearned at an early enough age are, in fact, erased. As brains develop, however, and related structures near the amygdala mature, these structures take on a greater role. Thus, fear in adolescence and later in life may not be erased, but instead be, for example, inhibited by a process of overlaying neutral memories on top of the initial fear reaction. The initial memory could still exist and be called on again.

"Extinction in the young brain might forever erase early traumatic learning--but accepting this hypothesis will have to wait for more research," says Mark Bouton, PhD, of the University of Vermont, who did not participate in the research. "What might change as the brain develops is where and how fear learning and extinction are stored and how they can be retrieved."

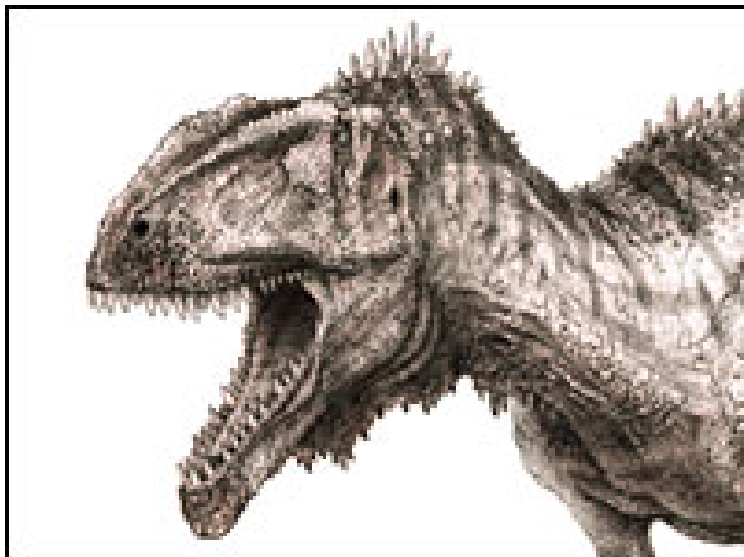
The findings appear in the Feb. 6 issue of *The Journal of Neuroscience*. The work was supported by grants from the Australian Research Council.

Adapted from materials provided by [Society for Neuroscience](#).

<http://www.sciencedaily.com/releases/2008/02/080206162301.htm>

New meat-eating dinos identified

Two previously unknown types of meat-eating dinosaur have been identified from fossils unearthed in the Sahara desert in Niger.



The new carnivore fossils have been described by a researcher from the University of Bristol working with palaeontologists from the US.

One of the dinosaurs probably scavenged its prey like a hyena, the other probably hunted live animals.

Details appear in the journal *Acta Palaeontologica Polonica*.

The fossilised remains of two 110-million-year-old carnivorous dinosaurs were found along the western edge of the Tenere Desert in Niger by Dr Paul Sereno, from the University of Chicago, eight years ago.

"They are the earliest records of both major carnivore groups that would go on to dominate Africa, South America, and India during the next 50 million years, in the Cretaceous Period," said co-author Steve Brusatte, from the University of Bristol.

Hidden face

One of the creatures was about 8m (25ft) in length and sported a short snout with a horny covering. It has been named *Kryptops palaios* or "old hidden face".

Kryptops may have scavenged food in a manner similar to a hyena.

Like later members of its dinosaur group - known as the abelisaurids - in South America and India, it had short, armoured jaws and small teeth, well designed for gobbling guts and gnawing carcasses.

The other discovery is of a similar-sized contemporary called *Eocarcharia dinops* or "fierce-eyed dawn shark".

It possessed blade-shaped teeth and a prominent bony eyebrow ridge. Unlike *Kryptops*, its teeth were more suited to attacking live prey and severing body parts.



The Carcharodontosaurids, the group to which *Eocarcharia* belongs, included predators as big, if not bigger, than *Tyrannosaurus rex* .

A swollen bony brow over *Eocarcharia* 's eye gave it a menacing appearance and may have been used as a battering ram against rivals for mating rights, say the researchers.

These two meat eaters were contemporaries of another carnivorous dinosaur which is known from the same area: *Suchomimus* , a large fish-eating theropod.

"It is clear from their anatomy that they were eating different things: *Suchomimus* ate fish, *Kryptops* ate smaller animals and *Eocarcharia* was the top predator of its day," said Mr Brusatte.

"Just like in the African savannah today, lions, cheetahs and hyenas must eat different food to survive side by side. It is fascinating to see this in a 110-million-year-old ecosystem."

Story from BBC NEWS:

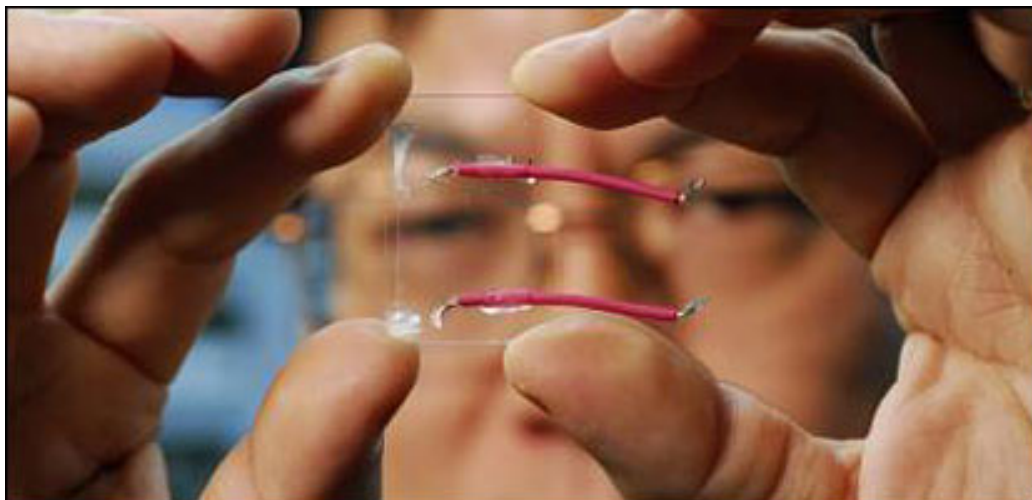
<http://news.bbc.co.uk/go/pr/fr/-/1/hi/sci/tech/7243665.stm>

Published: 2008/02/14 01:09:10 GMT

Nanowires allow 'power dressing'

By Jonathan Fildes

Science and technology reporter, BBC News



"Power dressing" may soon have a very different and literal meaning.

Scientists in the US have developed novel brush-like fibres that generate electrical energy from movement.

Weaving them into a material could allow designers to create "smart" clothes which harness body movement to power portable electronic gadgets.

Writing in the journal *Nature*, the team say that the materials could also be used in tents or other structures to harness wind energy.

"Our goal is to make self-powered nanotechnology," Professor Zhong Lin Wang of the Georgia Institute of Technology and one of the authors of the paper told BBC News.

"Airflows, vibrations - all these are mechanical energy that we can harvest to power devices."

Dr Dianne Jones, technical director of textile electronics firm Fibretronic, said that as the market for wearable electronics expands, technologies such as the nanofibres would become increasingly attractive.

"Any new power source which could provide a more integrated and soft solution in place of conventional hard battery technology would be very attractive for clothing or other electronic textile-based applications," she said.

Otilia Saxl, chief executive of the Institute of Nanotechnology, believes the technology could also find a use in healthcare.

"It could perhaps be used to power tiny medical devices like a true cochlear implant or heart pacemaker, or a delivery mechanism for subcutaneous drug delivery implants or antibiotic drug reservoirs for preventing infection in retinal implants," she said.

Hair spray



The nano-generators, as the technology is known, consist of pairs of fibres that look similar to tiny, bendable bottle-brushes.

At the core of each fibre is a Kevlar stalk.

"On the surface we grow crystals called nanowires," said Professor Wang.

Each tiny wire is 30-50 nanometres (billionths of a metre) in length and is made of zinc oxide. They are grown in solution.

"The growth is so spectacular that on the surface of the fibre all these nanowires stick out radially," he said. "And you can grow these on any substrate - hair or whatever you have."

One of the bristled fibres is also dipped in gold to act as an electrode. When the pair is scrubbed together they create a small amount of electrical energy.

"The fibre has a piezoelectric effect," said Professor Wang. "This is an important effect that converts mechanical energy to electricity."

Experiments with the prototypes showed that two 1cm-long fibres could generate a current of four nanoamperes and an output voltage of about four millivolts.

"If we can optimise the design we can get up to 80 milliwatts per square metre of fabric - that could potentially power an iPod."

The ability to generate power for personal electronics using the clothing we wear would be a breakthrough in smart and interactive garments

Dianne Jones

However, Professor George Stylios of Heriot Watt University, who works on smart flexible materials, said he believed it may be tricky to generate "meaningful" amounts of energy from clothing using the fibres.

"I think it will be very difficult to generate an output useful enough to power up devices," he said.

In particular, he believes anybody wearing the fibres would have to move very fast and would have to wear a lot of fabric.

"You may be able to use the fibres for other applications such as changing the structure or colour of materials," he said.

Fashion show

The fibres are the latest development in the field of "energy harvesting" which seeks to develop methods to recover otherwise-wasted energy and convert it into useful electrical energy.

Everyday examples include wind-up radios and self-winding watches.

The US defence research agency Darpa also has a project to tap energy from generators implanted in soldier's boots.



And earlier this year, scientists in Canada showed off a knee brace that would work as a dynamo.

Professor Wang and his team are aiming to develop devices that could be incorporated into everyday fabrics and materials.

He has already presented a nano-generator attached to a rigid surface that could be used to power sensors on vehicles.

The new fibres, he believes, could be used in smart fabrics. These could be useful to the military as well as gadget lovers.

"The ability to generate power for personal electronics using the clothing we wear would be a breakthrough in smart and interactive garments," said Dr Jones.

Her company - Fibretronic - make textile switches and keypads for clothing that allow users to control mp3 players in their pockets.

She said, there were several challenges to overcome before the nano-generator technology could be used commercially such as developing effective storage for the electricity to ensure a consistent supply.

Cost and ease of manufacture would also be important, she said, but believes the research shows promise.

"The possibility of developing piezoelectric, or energy generating fibres or fabrics has been something that the smart fabrics research community has been speculating about for some time," she said.

"[This work] may have brought the concept one step closer to realisation."

Story from BBC NEWS:
<http://news.bbc.co.uk/go/pr/fr/-/2/hi/technology/7241040.stm>

Published: 2008/02/13 18:15:09 GMT

India facing smoking death crisis
One million people a year will die from tobacco smoking in India during the 2010s, research predicts.



The New England Journal of Medicine study found smoking already accounts for 900,000 deaths a year in India.

The study warns that without action, the death toll from smoking will climb still further.

It predicts smoking could soon account for 20% of all male deaths and 5% of all female deaths between the ages of 30 and 69.

The researchers have calculated that on average, men who smoke bidi - small hand-rolled cigarettes common in India - lose about six years of life.

Men who smoke full-size cigarettes shorten their lives by about ten years.

It is truly remarkable that one single factor, namely smoking, which is entirely preventable, accounts for nearly one in 10 of all deaths in India

Professor Amartya Sen
Harvard University

And for women bidi smokers the figure is about eight years.

The figures are based on a survey of deaths among a sample of 1.1 million homes in all parts of India carried out by about 900 field workers.

Among men who died between the ages of 30 and 69, smoking caused about 38% of deaths from tuberculosis, 32% of deaths from cancer and 20% of deaths from vascular disease.



Surprising findings

Lead researcher Professor Prabhat Jha, of the University of Toronto, said: "The extreme risks from smoking that we found surprised us, as smokers in India start at a later age than those in Europe or America and smoke less."

It is estimated that there are about 120 million smokers in India.

The study found that, among men, about 61% of those who smoke can expect to die at ages 30-69 compared with only 41% of otherwise similar non-smokers.

Among women, 62% of those who smoke can expect to die at ages 30-69 compared with only 38% of non-smokers.

Professor Amartya Sen, of Harvard University, said: "It is truly remarkable that one single factor, namely smoking, which is entirely preventable, accounts for nearly one in 10 of all deaths in India.

"The study brings out forcefully the need for immediate public action in this much-neglected field."

Dr Anbumani Ramadoss, India's health minister, said: "I am alarmed by the results of this study.

"The government of India is trying to take all steps to control tobacco use - in particular by informing the many poor and illiterate of smoke risks."

Jean King, director of tobacco control at Cancer Research UK, said India could learn from the UK, where falling smoking rates over the last 30 years have coincided with the world's biggest drop in deaths from lung cancer, particularly among men.

Story from BBC NEWS:

<http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/7239722.stm>

Published: 2008/02/13 22:12:35 GMT

Probiotics 'protect top athletes'**Probiotic supplements reduce the number and length of infections suffered by long-distance runners, Australian research has found.**

Strenuous training can affect the immune system and make athletes vulnerable to coughs and colds.

British Journal of Sports Medicine study found taking probiotics more than halved the days they had symptoms.

However, a British specialist said the same effect was less likely for people who were less active.

The fitness, lifestyles, diets and dietary control of long-distance runners is likely to be substantially different from those of the general population

Professor Jeremy Nicholson
Imperial College London

There is increasing evidence that probiotic supplements - which contain so-called "friendly bacteria" - can have an effect on the immune system, although it is unclear precisely how.

Recent studies have found that even though the bacteria are vastly outnumbered by those already present in the gut, they appear to have an effect on the metabolism.

The small study conducted at the Australian Institute of Sport in Canberra focused on 20 top-level endurance runners during their intensive winter training programme, when colds and other respiratory infections can be disruptive.

Over the four months, all 20 received two month-long courses of pills - one containing the bacterium *Lactobacillus fermentum*, and the other containing no active ingredients.

All the athletes then recorded any days in which they were suffering from symptoms such as coughs and runny noses.



They then compared the toll of illness across the group, finding a total of 72 days in which people taking the "dummy" pills complained of symptoms.

When the same number of "probiotic" days was examined, only 30 were hit by illness.

Training gain

Blood tests taken from the athletes found doubled levels of interferon gamma, a chemical involved in the body's immune system, suggesting that the probiotics might somehow be helping the body to protect itself.

The researchers said that the reason behind the study was to find ways to maximise the benefits to athletes getting ready for major events.

"An improvement in resistance to common illnesses constitutes an important benefit to elite athletes undertaking high-level training in preparation for national and international competitions," they wrote.

However, they said that it would be worth investigating the potential of probiotics to help everyone else.

Separate group

Professor Jeremy Nicholson, from Imperial College London, who carries out his own research into the effects of probiotics on the body, said the small size of the study made it hard to draw any firm conclusions.

He said: "The fitness, lifestyles, diets and dietary control of long-distance runners is likely to be substantially different from those of the general population - and we know from other work that people with low Body Mass Index (BMI) have very different gut microflora to high BMI individuals, as this relates both to diet and obesity.

"Thus conclusions drawn from a physiologically and microbiologically separate test population - the runners - may not be applicable to the sadly unfit, nutritionally unbalanced general population to which most of us belong."

Story from BBC NEWS:

<http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/7243006.stm>

Published: 2008/02/14 00:24:21 GMT

Pupils promised 'quality culture'

Culture "enriches lives" the government says

Schoolchildren in England are being promised high-quality cultural activities in and out of school and the chance to pursue creative careers.



The Department for Children, Schools and Families says each child will have access to "at least five hours of high-quality culture per week".

There is to be a particular focus on "those who would otherwise miss out".

Teachers' unions applauded the aims but said there were practical difficulties and queries over who would pay.

There are to be £25m pilot schemes in 10 areas - with local authorities invited to bid to take part - involving visits to top theatre shows, galleries and museums.

Other options in the "Find Your Talent" scheme include acting, singing and learning a musical instrument or making a film.

Children's Secretary Ed Balls and Culture Secretary Andy Burnham launched this aspect of the recently-announced Children's Plan at the Young Vic Theatre, in south London.

The idea of the scheme we're putting forward is very much for schools and local authorities to come forward with their plans

Andy Burnham,
Culture secretary



Mr Balls said: "All children and young people should have the chance to experience top quality culture - whether that is seeing a play or dance performance, learning a musical instrument or producing some creative writing.

"Many of us remember the first ever live music we heard or the first ever performance we saw.

"I want all young people to have the chance to experience and take part in creative activities to help them learn and develop."

Details

The children's department says culture enriches their lives.

"This programme will give them the opportunity to learn in and about culture, developing as critical spectators, participants and creators of the cultural world around them.

"They will learn through culture using engagement with the arts and other activities to boost attainment, other skills and personal development."

Mr Burnham said it would be up to schools to work out the fine details of the scheme.

HAVE YOUR SAY Let children experience ballet, theatre, art and history Eleanor Wilkins, UK

"Some of this could be delivered in the school day, but also we want to give young people the opportunity to do more out of the school day.

"The idea of the scheme we're putting forward is very much for schools and local authorities to come forward with their plans of how they would deliver it."

A DCSF spokeswoman stressed that schools were not being expected to squeeze this into the curriculum.

"Schools are not on their own - the whole point of these pilots is that they will involve local musicians, theatres, galleries and other arts organisations in working with children.

"We are providing extra funding to make this a reality on the ground and the point of running pilots is precisely to work out the most effective way of helping more children to experience more cultural activities without creating extra work for schools."

The government is spending £110m over three years on "creative partnerships" between schools and outside organisations, more on supporting museums' education activities and £332m to support choirs, orchestras, and free music lessons.

'Depth and quality'

Under the new cultural programme, children will be given the chance to attend "top quality theatre and dance performances, world class exhibitions, galleries, museums and heritage sites".

They will also be encouraged to take part themselves. More will have the chance to learn a musical instrument, play and sing in groups and choirs, perform drama or make films.

The government needs to free schools up from the constrictures that they've put on them at the moment

Mick Brookes, NAHT



The plan says the government will ensure that those who show particular talents in an area will have chances to develop them.

The promise is "depth and quality", not just access to something or one-off activities.

The general secretary of the National Association of Head Teachers, Mick Brookes, said there were practical difficulties.

"There'll be thousands of Year 6 children - 10 or 11-year-olds - going to school today to rehearse for their Sats [national curriculum tests] in May," he said.

"Now, I think it would be much better to have a day doing poetry, listening to music and having those cultural experiences but the government needs to free schools up from the constrictures that they've put on them at the moment."

Shadow culture secretary Jeremy Hunt said: "With opposition from teachers, this badly thought through policy has already started to crumble.

"Everyone would like children to do more cultural activities but governments have to provide practical policies not just vague aspirations."

Story from BBC NEWS:

http://news.bbc.co.uk/go/pr/-/2/hi/uk_news/education/7241460.stm

Published: 2008/02/13 15:14:03 GMT

New Technique Makes Tissues Transparent

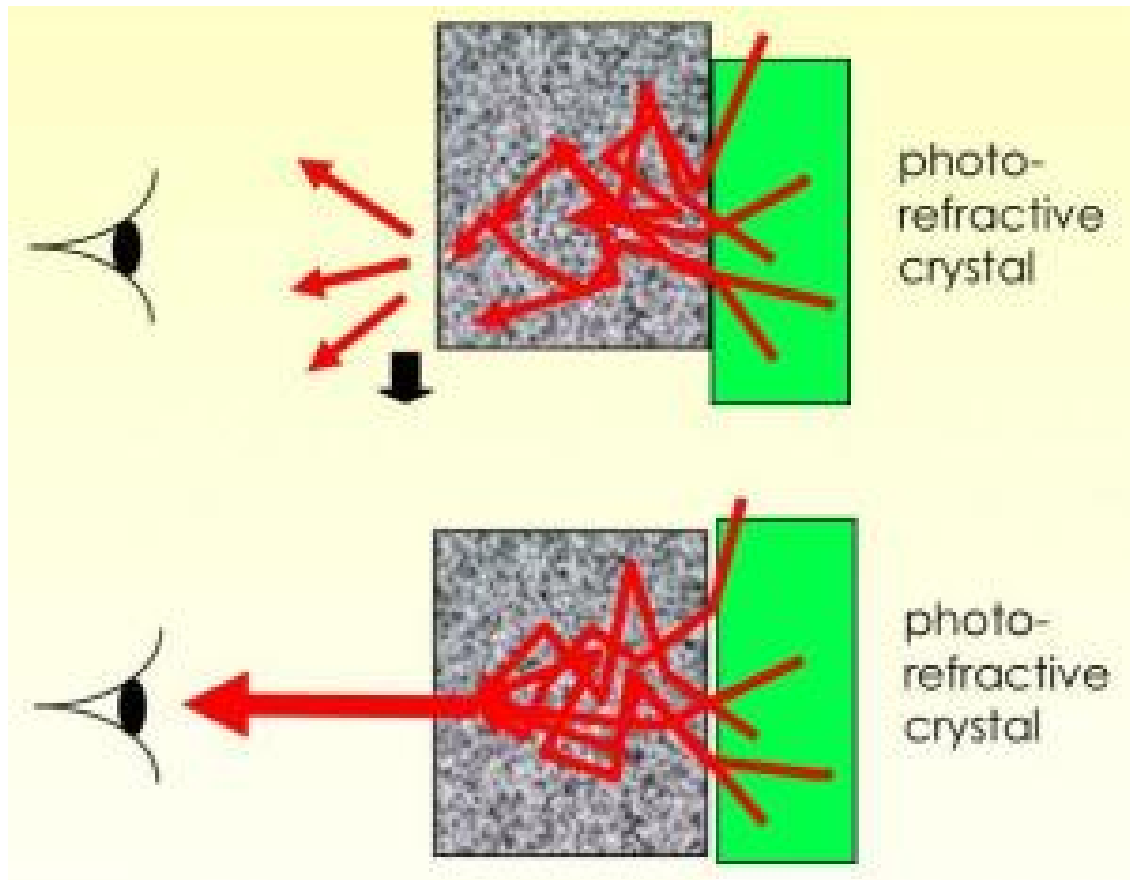


Diagram of chicken breast tissue (approximately 250 microns thick) with photo-refractive crystal to counteract the scattering of light and remove the distortion it creates in images. The lower diagram would show the clearest image. (Credit: Caltech Biophotonics Laboratory)

ScienceDaily (Feb. 13, 2008) — If humans had see-through skin like a jellyfish, spotting disease like cancer would be a snap: Just look, and see a tumor form or grow.

But humans, of course, are not remotely diaphanous. "The reason a person is not transparent is that their tissues are highly scattering," sending light waves careening through the tissue instead of straight through, as they would through the tissue of that jellyfish, explains Changhuei Yang of the California Institute of Technology.

This scattering, in addition to rendering all of us opaque, makes the detection of disease a much trickier issue, requiring a host of diagnostic tests and procedures. But not, perhaps, for much longer, thanks to a new optical trick developed by Yang, an assistant professor of electrical engineering and bioengineering, and his colleagues, that counteracts the scattering of light and removes the distortion it creates in images.

It is well known that light scattering in a material is not exactly the random and unpredictable process one might imagine. In fact, scattering is deterministic, which means that the path that a beam of light takes as it traverses a particular slice of tissue and bounces and rebounds off of individual cells, is entirely predictable; if you again bounce light through that same swath of cells, it will scatter in exactly the same way.

The process is even reversible; if the individual photons of light that scattered through the tissue could be collected and sent back through the tissue, they'd bounce back along the same path and converge at the original spot from which they were sent. "The process is similar to the scattering of billiard balls on a



pool table. If you can precisely reverse the paths and velocities of the billiard balls, you can cause the billiard balls to reassemble themselves into a rack," Yang explains.

Yang, along with his colleagues at Caltech, École Polytechnique Fédérale de Lausanne in Switzerland, and MIT, exploited this phenomenon to offset the murky nature of our tissues.

Their technique, called turbidity suppression by optical phase conjugation (TSOPC), is surprisingly simple. The scientists used a holographic crystal to record the scattered light pattern emerging from a 0.46-mm-thick piece of chicken breast. They then holographically played the pattern back through the tissue section to recover the original light beam. "This is similar to grabbing hold of the direction of time flow and turning it around; the time-reversed photons must retrace their trajectories through the tissue," Yang says. "The task is formidable though, as this is comparable to starting with a rack of 10 to the 18th power billiard balls (or photons), scattering them around the table, and attempting to reassemble them into a rack."

"Until we did this study, it wasn't clear that the effect will be observable with biological tissues. We were pleasantly surprised that the effect was readily observable and remarkably robust," Yang says. "This study opens up numerous possibilities in the use of optical time reversal in biomedicine."

One possible use of the technique is in photodynamic therapy, in which a highly focused beam of light is aimed at cancerous cells that have absorbed cell-killing light-sensitive compounds. When the light hits the cells, the compounds are activated and destroy the cells. Photodynamic therapy is most effective in treating cancers on the skin surface. Yang's technique, however, offers a way to concentrate light onto cancer-killing compounds located more deeply within tissue.

Yang's idea is to inject strongly light-scattering particles that are coated with light-activated cancer-killing drugs into diseased tissue. Shine a beam of light into the tissue, and it would be reflected off the scattering compounds as it bounces through the tissue. Some of the scattered light would return to the source, where it could be recorded as a hologram.

This hologram would contain information about the path that the scattered light took through the tissue, and, in effect, describe the optimal path BACK toward the light-scattering molecule--and the cancer-killing compounds. Playing back the signal with a stronger burst of light will then activate the therapeutic drugs, which kill the cancer cells.

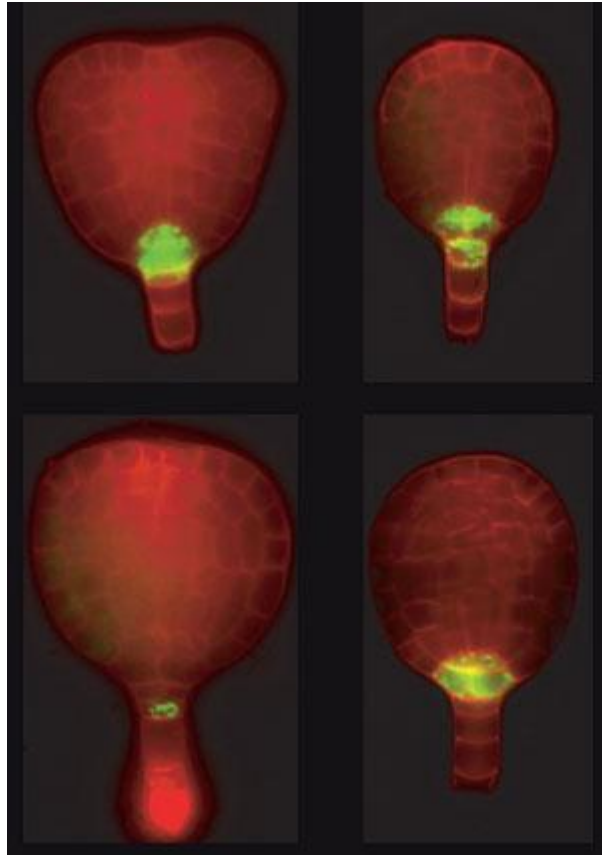
In addition, the technique could offer a way to power miniature implants buried deep within tissues. "If you take a quick survey of what is out there at present, you will see that implants are fairly large," Yang says. "For example, a pacemaker is about the size of a cell phone. Why are they so big? A large part of the reason is because they need to carry their own power sources."

The key to making smaller implants, then--say, the size of a pen tip--is to eliminate the power sources. "I think implants that carry photovoltaic receivers are particularly promising," he says. "The effect can be applied to tailor light-delivery mechanisms to efficiently channel light into tissues and onto these implants."

A study describing the process appears in the February issue of the journal *Nature Photonics*. Zahid Yaqoob, a postdoctoral fellow in electrical engineering at Caltech, performed most of the experiments reported in the paper. The other authors of the paper are Demetri Psaltis, professor of optics and dean of engineering, École Polytechnique Fédérale de Lausanne in Switzerland, and Michael S. Feld, a professor of physics at MIT.

Adapted from materials provided by [California Institute of Technology](http://www.caltech.edu).

How A Plant Know To Send Roots Down And Shoots Up: EAR Calls The Shots



The lens shaped cell (shown in green) at the base of the plant embryo (shown in red) will go on to form the center of the root meristem – the actively dividing cell tissue at the tips of roots. It fluoresces green in response to auxin, which governs root development (top left). Embryos with a mutation in the TOPLESS gene still respond normally to auxin (top right), while embryos without a functional version of BODENLOS cannot respond to auxin and as a result fail to develop roots (bottom left). Combining both mutations restores the auxin response as well as root development (bottom right). (Credit: Courtesy of Dr. Jeffrey Long, Salk Institute for Biological Studies)

ScienceDaily (Feb. 13, 2008) — Controlled by a tightly regulated choreography that determines what should go up and what should go down, plants develop along a polar axis with a root on one end and a shoot on the other.

While studying why a defective TOPLESS gene causes plant embryos to develop into a seedling topped with a second root instead of a stem with leaves, researchers at the Salk Institute for Biological Studies hit upon the linchpin that ensures that plants are neither all root nor all shoot.

Turns out the question, "Root or shoot?" literally hinges on the EAR domain, a short protein sequence only six amino acids long.

The Salk researchers' findings, published in the February 7 issue of Science Express, explain how mutations in TOPLESS can switch a plant cell's fate from shoot to root and in the process clarify the purpose of the so-called EAR motif, a protein domain whose function has puzzled plant scientists for several years.

"We've known for a while that the EAR domain can turn off transcription, but how it did this was an open question," says the study's lead author, Jeffrey A. Long, Ph.D., an assistant professor in the Plant



Molecular and Cellular Biology Laboratory. "We didn't set out to fish for molecules that bind to the EAR domain, but when we used TOPLESS as a bait, that's what we found."

Scientists and home gardeners alike have been messing with plants' basic architecture for years: Permanently switch on a gene called BODENLOS (or bottomless) and plants forgo root development altogether. Dip plant cuttings into hormone rooting powder and roots start to sprout where none have been. The active ingredient, a synthetic version of the plant hormone auxin that regulates root growth in plants, overrides the molecular switch that keeps auxin-responsive genes turned off in parts of the plant that are above ground.

In an earlier study, Long and his team had discovered that the switch is none other than TOPLESS, the protein encoded by the TOPLESS gene. It had become clear that TOPLESS functions as a so-called co-repressor, which regulate gene expression by inhibiting the activity of transcription factors. Transcription factors control gene activity by binding to DNA sequences adjacent to a gene. But exactly how TOPLESS silences genes necessary for root development has remained unclear.

Hoping to gain insight into how TOPLESS functions by looking at the company it keeps, lead author Heidi Szemenyei, a former graduate student in Long's lab and now a postdoctoral researcher at UC Berkeley, searched for interacting partners in the plant *Arabidopsis thaliana*. This wee weed was the first flowering plant to have its genome unlocked and is loved by plant biologists for its short generation time.

She discovered that BODENLOS, a transcriptional repressor that silences auxin-responsive genes, relies on its EAR domain to recruit the co-repressor TOPLESS to help with the job. While auxins are found throughout the whole plant, BODENLOS is only active in the shoot, ensuring that no accidental roots sprout above ground.

"The coupling of TOPLESS to BODENLOS provides an elegant mechanism for the plant to control the activity of auxin-responsive genes," says Long.

Mike Hannon, a graduate student in Long's lab also contributed to the study.

Adapted from materials provided by [Salk Institute](#).

<http://www.sciencedaily.com:80/releases/2008/02/080207140806.htm>



One Drink Of Red Wine Or Alcohol Is Relaxing To Circulation, But Two Drinks Are Stressful

ScienceDaily (Feb. 13, 2008) — One drink of either red wine or alcohol slightly benefits the heart and blood vessels, but the positive effects on specific biological markers disappear with two drinks, say researchers at the Peter Munk Cardiac Centre of the Toronto General Hospital.

Researchers conducted a real-time study of thirteen volunteers to determine whether a red wine with a verified high polyphenol content differs from alcohol in its effects on specific markers associated with a greater risk of high blood pressure, coronary artery disease and heart failure.

A large number of population studies have shown a protective effect of light or moderate alcohol drinking against the risk of death and the development of heart disease. Many studies have also reported specific benefits of red wine.

Population surveys found lower rates of heart disease, despite high-fat diets, in some European countries where red wine was consumed regularly. Widely known as the French paradox, this has created a huge interest in exploring if and how red wine has a protective effect against heart disease.

However, the findings of this study* showed virtually identical effects of red wine and alcohol on the specific markers tested. After one drink of either red wine or alcohol, blood vessels were more “relaxed” or dilated, which reduced the amount of work the heart had to do. But, after two drinks, the heart rate, amount of blood pumped out of the heart, and action of the sympathetic nervous system all increased. At the same time, the ability of the blood vessels to expand in response to an increase in blood flow diminished. This counteracted the beneficial effect of one drink of red wine or alcohol.

“We had anticipated that many of the effects of one ethanol drink would be enhanced by red wine. What was most surprising was how similar the effects were of red wine and ethanol. Any benefits that we found were not specific to red wine,” said Dr. John Floras, Director of Cardiology Research at the Peter Munk Cardiac Centre, and at Mount Sinai Hospital, in whose laboratory the study was performed. However, Dr. Floras cautioned this study measured the effects of these drinks on one occasion only. The effects of daily wine or alcohol intake may be quite different.

The laboratory of Dr. Floras, who holds the Canada Research Chair in Integrative Cardiovascular Biology and is a Professor of Medicine at the University of Toronto, and a Career Investigator of the Heart and Stroke Foundation, is one of the few in the world equipped to measure simultaneously a broad spectrum of factors such as blood pressure, heart rate, sympathetic nerve firing and arterial diameter.

Healthy, non-smoking adults who were not heavy drinkers or total alcohol abstainers were studied. Participants attended three separate morning sessions during which “standard” drinks of red wine, ethanol or water were administered at random, single-blind, two weeks apart. A 4-oz glass of wine (120 ml), and a 1.5-oz (44 ml) shot of spirits is considered to be one standard drink. All blood alcohol levels alcoholic were below .08, the legal limit for drivers.

The Quality Assurance Laboratory of the Liquor Control Board of Ontario selected a moderately priced pinot noir with a verified high t-resveratrol content, a polyphenol compound found in plants, including red grapes, which exhibits antioxidant properties. Alcohol or substances in alcohol such as resveratrol may improve blood vessel function and also prevent platelets in the blood from sticking together, which may reduce clot formation and the risk of heart attack or stroke.

Select study findings:

One drink of either red wine or alcohol:



- Has no effect on heart rate, blood pressure or sympathetic nerve activity, which activates the “fight or flight” reaction and generally modulates heart rate and sets the diameter of blood vessels in order to redistribute blood;
- Dilates the brachial artery.

Two drinks of either alcohol or red wine:

- Increase sympathetic nerve activity, heart rate, and the amount of blood the heart pumps out, and also blunt the ability of the brachial artery to expand further in response to blood flow.
- Increases in heart rate and sympathetic nerve activity are recognized markers for hypertension (high blood pressure), heart failure and sudden death.

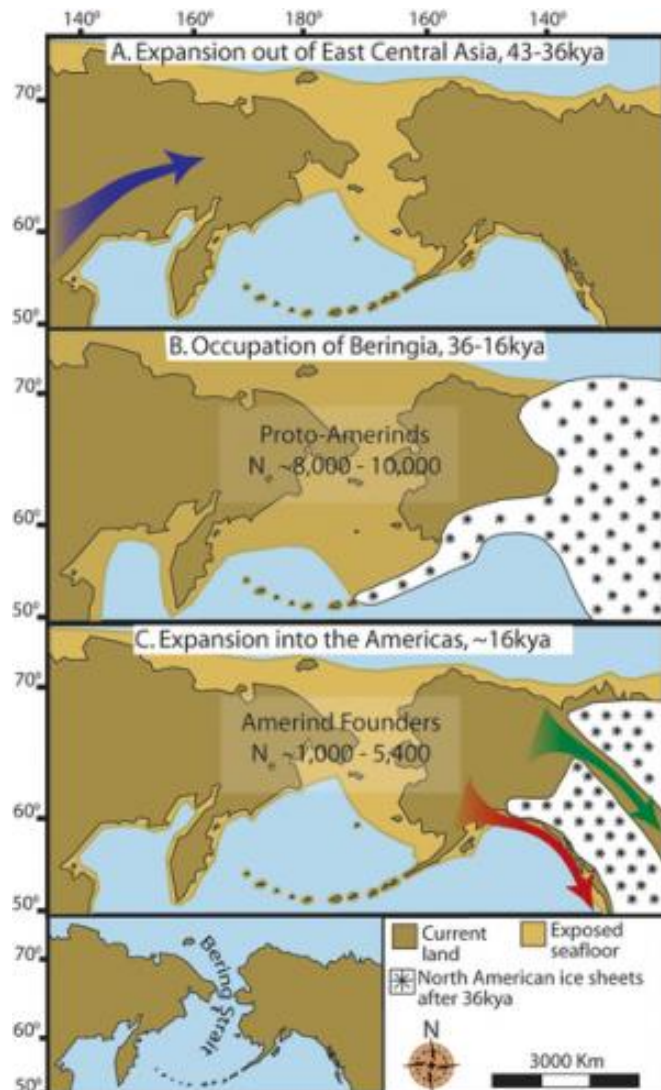
“Our findings point to a slight beneficial effect of one drink – be it alcohol or red wine – on the heart and blood vessels, whereas two or more drinks would seem to turn on systems that stress the circulation. If these actions are repeated frequently because of high alcohol consumption these effects may expose individuals to a higher risk of heart attacks, stroke or chronic high blood pressure,” noted Dr. Floras, adding that the American Heart Association (AHA) does not recommend that anyone start drinking alcohol to prevent heart disease. Reducing risk can be done using other methods such as exercise and following a healthy diet.

The study entitled “Dose-related effects of red wine and alcohol on hemodynamics, sympathetic nerve activity, and arterial diameter”, was published in the February edition of the American Journal of Physiology, Heart and Circulatory Physiology. This study was supported by the Heart and Stroke Foundation of Ontario, the Canadian Institutes of Health Research, and the Canada Research Chairs Program.

Adapted from materials provided by University Health Network, via Newswise.

<http://www.sciencedaily.com:80/releases/2008/02/080212174615.htm>

Thousands Of Humans Inhabited New World's Doorstep For 20,000 Years



Maps depicting each phase of our three-step colonization model for the peopling of the Americas. (Credit: Kitchen A, Miyamoto MM, Mulligan CJ (2008) A Three-Stage Colonization Model for the Peopling of the Americas. *PLoS ONE* 3(2): e1596. doi:10.1371/journal.pone.0001596)

ScienceDaily (Feb. 13, 2008) — The human journey from Asia to the New World was interrupted by a 20,000 -year layover in Beringia, a once-habitable region that today lies submerged under the icy waters of the Bering Strait. Furthermore, the New World was colonized by approximately 1,000 to 5,000 people - a substantially higher number than the 100 or fewer individuals of previous estimates.

The developments, to be reported by University of Florida Genetics Institute scientists in *PloS One*, help shape understanding of how the Americas came to be populated - not through a single expansion event that is put forth in most theories, but in three distinct stages separated by thousands of generations.

"Our model makes for a more interesting, complex scenario than the idea that humans diverged from Asians and expanded into the New World in a single event," said Connie Mulligan, Ph.D., an associate professor of anthropology at the College of Liberal Arts and Sciences and assistant director of the UF Genetics Institute. "If you think about it, these people didn't know they were going to a new world. They were moving out of Asia and finally reached a landmass that was exposed because of lower sea levels during the last glacial maximum, but two major glaciers blocked their progress into the New World. So they basically stayed put for about 20,000 years. It wasn't paradise, but they survived. When the North



American ice sheets started to melt and a passage into the New World opened, we think they left Beringia to go to a better place."

UF scientists analyzed DNA sequences from Native American, New World and Asian populations with the understanding that modern DNA is forged by an accumulation of events in the distant past, and merged their findings with data from existing archaeological, geological and paleoecological studies.

The result is a unified, interdisciplinary theory of the "peopling" of the New World, which shows a gradual migration and expansion of people from Asia through Siberia and into Beringia starting about 40,000 years ago; a long waiting period in Beringia where the population size remained relatively stable; and finally a rapid expansion into North America through Alaska or Canada about 15,000 years ago.

"This was the raw material, the original genetic source for all of the Americas," said Michael Miyamoto, Ph.D., a professor and associate chairman of zoology in UF's College of Liberal Arts and Sciences. "You can think of the people as a distinct group blocked by glaciers to the east. They had already been west, and had no reason to go back. They had entered this waiting stage and for 20,000 years, generations were passing and genetic differences were accumulating. By looking at the kinds and frequencies of these mutations in modern populations, we can get an idea of when the mutations arose and how many people were around to carry them."

Working with mitochondrial DNA - passed exclusively from mothers to their children - and nuclear DNA, which contains genes from both parents, UF scientists essentially added genetic information to what had been known about the archaeology, changes in climate and sea level, and geology of Beringia.

The result is a detailed scenario for the timing and scale of the initial migration to the Americas, more comparable to an exhaustive video picture rather than a single snapshot in time.

"Their technique of reading population history by using coalescence rates to analyze genetic data is very impressive - innovative anthropology and edge-of-the-seat population study," said Henry C. Harpending, Ph.D., a distinguished professor and endowed chairman of anthropology at the University of Utah and a member of the National Academy of Sciences who was not involved with the research. "The idea that people were stuck in Beringia for a long time is obvious in retrospect, but it has never been promulgated. But people were in that neighborhood before the last glacial maximum and didn't get into North America until after it. It's very plausible that a bunch of them were stuck there for thousands of years."

As for Beringia, sea levels rose about 10,000 to 11,000 years ago, submerging the land and creating the Bering Strait, which now separates North America from Siberia with more than 50 miles of open, frigid water.

"Our theory predicts much of the archeological evidence is underwater," said Andrew Kitchen, a Ph.D. candidate in the anthropology department at UF who participated in the research. "That may explain why scientists hadn't really considered a long-term occupation of Beringia."

UF researchers believe that their synthesis of a large number of different approaches into a unified theory will create a platform for scientists to further analyze genomic and non-genetic data as they become available.

Citation: Kitchen A, Miyamoto MM, Mulligan CJ (2008) A Three-Stage Colonization Model for the Peopling of the Americas. PLoS One 3(2): e1596. doi:10.1371/journal.pone.0001596

Adapted from materials provided by [University of Florida](http://www.universityofflorida.edu).

<http://www.sciencedaily.com:80/releases/2008/02/080213090524.htm>



Mechanism Leading To Cleft Palate Discovered



Zebrafish face with cleft palate. (Credit: Courtesy of John Postlethwait)

ScienceDaily (Feb. 13, 2008) — By creating a genetic mutation in zebrafish, University of Oregon scientists say they've discovered a previously unknown mechanism for cleft palate, a common birth defect in humans that has challenged medical professionals for centuries.

Many molecular pathways in zebrafish are present in humans and other vertebrates. By studying the induced mutation in zebrafish, the 10-member research team isolated a disruption in early developmental signaling involving Pdgf, a platelet-derived growth-factor protein, and a microRNA known as Mirn140, the researchers write in a paper posted online in advance of regular publication in the journal *Nature Genetics*.

Mutant zebrafish lacking Pdgf had cleft palate similar to many human babies, showing that this growth factor helps to organize cells that make the palate. It came as a surprise that zebrafish into which the investigators had injected too much Mirn140 also had cleft palate.

MicroRNAs are small gene products, found to be involved in gene expression, that were first described in 1993 by researchers at Harvard University. The term microRNA was introduced in when these single-strand RNA molecules about nucleotides in length were more fully detailed in *Science* in October 2001 by Gary Ruvkun of Massachusetts General Hospital in Boston.

Mirn140, when operating normally, allows for normal cell signaling by the Pdgfra protein that properly triggers cell migrations necessary for correct oral-cranial building. The researchers showed that Mirn140 blocks the cell's expression of Pdgfra. Thus, cleft palate can result from too little Pdgfra that occurs because of either a mutation in the Pdgfra gene or too much Mirn140.

"We showed that this microRNA regulates the expression of the gene by controlling the migration of precursor cells to the palate-forming area," said principal investigator John H. Postlethwait, a professor of biology and member of the UO's Institute of Molecular Biology and Institute of Neuroscience. "This is a novel mechanism never before described."



A cleft palate is an opening in the roof of the mouth in which the two sides of the palate did not fuse, or join together, during a baby's early development. Cleft palate can negatively affect speech production, feeding, maxillofacial growth and dentition.

The first known attempt to correct the defect occurred in 500 A.D. The defect occurs with or without cleft lip (a separation of the two sides of the lip), on average, in 1 in 600 newborns, according to the Cleft Palate Foundation, but can vary by race. The highest incidence (3.6 per 1,000 births) occurs in American Indians. Palate formation is thought to begin after five weeks of gestation in humans with defects becoming visible as early as 17 weeks.

The findings provide a new window into the mechanisms involved in cleft palate and craniofacial defects, but researchers caution that the findings don't point toward new clinical applications.

"Further exploration of how microRNAs and other factors modulate signaling pathways such as the Pdgf pathway during palatogenesis will assuredly continue to provide insights into the cause of, and possible treatments for, human craniofacial disease," the authors conclude.

Co-authors of the Nature Genetics paper with Postlethwait were: postdoctoral researcher Johann K. Eberhart; graduate students Xinjun He and Hao Song; research assistant Mary E. Swartz; research associate Yi-Lin Yan; undergraduate students Taylor C. Boling and Allison K. Kunerth; former graduate student Macie B. Walker; and Charles B. Kimmel, professor emeritus of biology. Eberhart and He were team leaders on the project, but all co-authors contributed equally.

The U.S. National Institutes of Health and U.S. National Center for Research Resources funded the research through grants to Postlethwait, Eberhart and Kimmel.

Adapted from materials provided by University of Oregon.

<http://www.sciencedaily.com:80/releases/2008/02/080211142023.htm>

Fake Malaria Drugs Made In China: Tracking Down The Threat To Global Health



Counterfeit artesunate anti-malarial tablet with fake 'X-52' stamp as seen under UV light. (Credit: Newton PN, Fernandez FM, Plancon A, Mildenhall DC, Green MD, et al.)

ScienceDaily (Feb. 13, 2008) — A unique collaboration between scientists, public health workers and police has led to the arrest by the Chinese authorities of alleged traders of fake anti-malarial drugs in southern China and the seizure of a large quantity of drugs. The work, involving teams from across the globe, has highlighted both the growing threat posed by fake pharmaceuticals and the complexities of tracking down those responsible for the trade.

Dubbed Operation Jupiter, the investigation was coordinated by the International Criminal Police Organisation (INTERPOL), the World Health Organization's Western Pacific Regional Office, and the Wellcome Trust-University of Oxford SE Asian Tropical Medicine Research Programme, in close cooperation with Chinese authorities. Scientists from 5 other laboratories analysed the composition of the fake drugs and their packaging.

Fake anti-malarial drugs are an increasingly serious problem, particularly in South-East Asia and Africa. In countries with a large burden of malaria, such as Myanmar (Burma), the Lao PDR, Cambodia and Viet Nam, as many as half of all artesunate tablets -- one of the most effective anti-malarial drugs -- is counterfeit.

Most of the fakes examined as part of Operation Jupiter contained no artesunate, and some contained a wide range of potentially toxic wrong active ingredients. Also of grave concern was the fact that counterfeiters sometimes included dangerously small amounts of artesunate in the tablets. This may be done to foil screening tests of drug quality, but these doses are too low to be efficacious, yet high enough to contribute to malaria parasites becoming resistant to this class of drugs.

"Artesunate, as part of artemisinin-based combination therapy, is vital for malaria treatment and is one of the most effective weapons we have against this terrible scourge," says Dr Paul Newton of the Wellcome Trust-University of Oxford SE Asian Tropical Medicine Research Programme. "Those who make fake anti-malarials have killed with impunity, directly through the criminal production of a medicine lacking active ingredients and by encouraging drug resistance to spread. If malaria becomes resistant to artesunate, the effect on public health in the tropics will be catastrophic."



In addition to analysing the chemistry of the samples, researchers used a technique known as forensic palynology to study pollen contamination within the fake tablets with the aim of tracking down the likely location of manufacture. The pollen evidence suggested that at least some of the counterfeit artesunate came from southern China, and this was supported by examination of the mineral calcite, found in some of the samples.

Armed with these findings by INTERPOL, Chinese authorities arrested a suspect in China's Yunnan Province in 2006. He is alleged to have traded 240,000 blisterpacks of counterfeit artesunate, enough to "treat" almost a quarter of a million adults with a medicine with no activity against a potentially fatal disease. Whilst the Chinese authorities were able to seize 24,000 of these packs, the remainder are alleged to have been sold at crossings on the border of Yunnan and Myanmar (Burma), accounting for almost a half of all blisterpacks of artesunate sold to the region.

The work of the Jupiter group highlights the need for more to be done internationally to support countries with a high prevalence of counterfeit anti-malarials in their attempts to combat this severe but under-recognised public health problem.

"Criminal investigations and legal action are important in disrupting and inhibiting the trade in fake medicines, but to be effective these will require financial support and resources," says Dr Newton. "Forensic tools may make it easier to identify the fake drugs and allow over-stretched police forces to focus on objective leads, greatly increasing the risks to counterfeiters of being caught. However, there are very few laboratories with the resources to perform detailed forensic chemistry or pollen analysis of fakes, particularly in the countries where they are most needed."

Journal citation: Newton PN, Fernandez FM, Plancon A, Mildenhall DC, Green MD, et al. (2008) A collaborative epidemiological investigation into the criminal fake artesunate trade in South East Asia. PLoS Med 5(2): e32.

Adapted from materials provided by Wellcome Trust.

<http://www.sciencedaily.com:80/releases/2008/02/080212085828.htm>



Dramatic Improvement In Aortic Valve Surgery Using Least Invasive Valve Replacement Procedure, Study Shows

ScienceDaily (Feb. 13, 2008) — A study published recently in the *Annals of Thoracic Surgery* shows a 45% reduction in operative mortality in high risk patients requiring aortic valve replacement when Least Invasive Valve techniques are used compared to the conventional approach. NYU surgeons Stephen B. Colvin and Aubrey C. Galloway developed the Least Invasive Valve “LiV” minimally invasive procedure to allow surgeons to safely and easily perform heart valve repair or replacement without the need for conventional open chest surgery.

The study used a measurement known as a “EuroScore” that establishes the risk level for each patient undergoing aortic valve replacement. Age and other health problems increase the patient's EuroScore indicating a higher risk for complications or mortality.

The group of patients in the study had EuroScores that put them in a high risk group, with a predicted operative risk of 17.2%, yet the actual observed operative risk was only 7.8%. The study further demonstrated that the LiV techniques used at NYU resulted in a 45% reduction in operative mortality compared with conventional surgery.

Aubrey Galloway, M.D., Seymour Cohn Professor & Chairman of Cardiothoracic Surgery at NYU Medical Center, stated, “The less invasive valve surgery techniques we have developed reduce complications and lower mortality risk in the highest risk groups requiring aortic valve replacement. In addition, least invasive surgical procedures can provide patients with a quicker recovery and faster return to normal activities.”

Lead author Eugene Grossi, M.D., Professor of Cardiothoracic Surgery and Director of Cardiac Surgical Research at NYU Medical Center, stated “percutaneous aortic valve replacement (PAVR) trials are ongoing in patients with elevated EuroSCOREs. These patients are believed to have high mortality rates and poor long-term prognoses with valve replacement surgery. We evaluated EuroSCORE prediction versus a single institution's surgical results in this target population; from January 1996 thru March 2006 in 731 patients with EuroSCOREs placing them in the high risk category.

Our results clearly show that LiV Aortic Valve Replacement is currently the standard for aortic valve replacement. The hospital mortality was reduced by 45% using the LiV Procedure, and more importantly the freedom from all causes of death, including hospital mortality, was 72.4% at 5 years in this high risk group of patients. Clinical trials for using Percutaneous Valve Procedures for high risk aortic valve replacement must include randomized surgical controls and have long-term endpoints.”

Adapted from materials provided by New York University Medical Center, via Newswise.

<http://www.sciencedaily.com:80/releases/2008/02/080211212153.htm>



How Noroviruses Cause Repeated Outbreaks Of 'Stomach Flu'

ScienceDaily (Feb. 13, 2008) — Norovirus, a common cause of gastroenteritis ("stomach flu"), could potentially be controlled by a vaccine. But because the virus evolves to avoid the immune system, the vaccine might have to be modified from year to year, according to new research published in *PLoS Medicine* by Ralph Baric of the University of North Carolina, Chapel Hill, and colleagues.

Noroviruses, which are highly contagious, cause nausea, vomiting, and diarrhea. While most people recover within a few days, the very young and old may experience severe disease. Although maintaining hydration is essential, there is no specific treatment for infection. As with influenza, epidemics of norovirus infection occur periodically (often in closed communities such as cruise ships), and most people have several norovirus infections during their lifetime. This winter the UK has seen almost twice as many norovirus cases compared to the same period last year.

Noroviruses infect cells after attaching to molecules called histo-blood group antigens (HBGA) present on the cell surface. HBGAs comprise a family of complex sugar molecules that exist in great variety among human beings. The researchers found that this variety provides the key to understanding how norovirus outbreaks continue to occur, even in populations that have previously been exposed to noroviruses and therefore harbor antibodies against them.

By analyzing noroviruses isolated from several outbreaks, the researchers found that the viruses evolved to avoid attack by antibodies the hosts developed against them. Over time, some viruses selected in this way attain a shape that enables them to bind to one of the other forms of HBGA, and thereafter are not only resistant to previously existing antibodies, but are also able to infect cells carrying that particular form of HBGA. These viruses can then cause a new outbreak, and the cycle repeats itself.

This continuing evolution of new replacement strains suggests that vaccines could be designed to protect against norovirus infection, but that, as with influenza vaccines, ongoing epidemiologic surveillance and reformulations of norovirus vaccines will be needed.

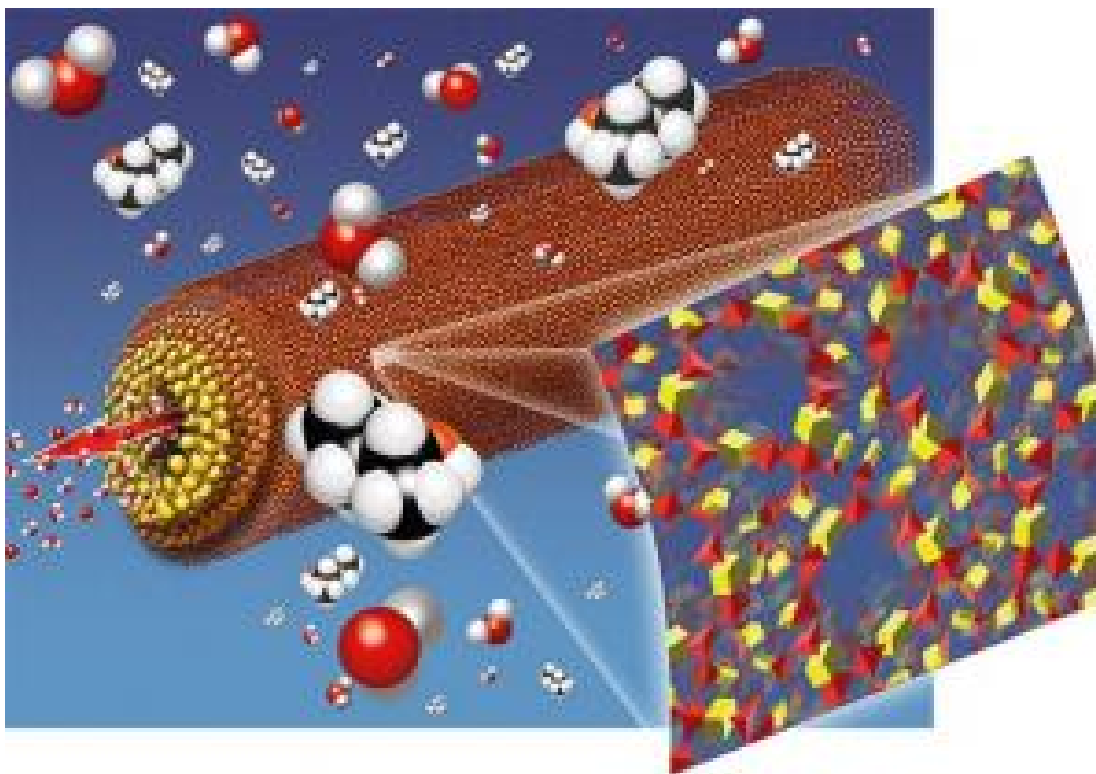
In a related perspective article, Ben Lopman and colleagues at the UK Health Protection Agency, who were not involved in the study, discuss the evolution of noroviruses and the implications of this research for the control of future outbreaks.

Citation: Lindesmith LC, Donaldson EF, LoBue AD, Cannon JL, Zheng DP, et al. (2008) Mechanisms of GII.4 norovirus persistence in human populations. *PLoS Med* 5(2): e31.
<http://medicine.plosjournals.org/perlserv/?request=get-document&doi=10.1371/journal.pmed.0050031>

Adapted from materials provided by PLoS Medicine, via EurekAlert!, a service of AAAS.

<http://www.sciencedaily.com:80/releases/2008/02/080212085836.htm>

Nanosieves Save Energy In Biofuel Production



The cylinder is the carrier of a hybrid membrane: a layer of about 100 nanometer thickness. The insert shows a close-up of the layer showing the organic links and pores. From the left of the tube, only water molecules leave the sieve. (Credit: Image courtesy of University of Twente)

ScienceDaily (Feb. 13, 2008) — A new type of membrane, developed by scientists of the University of Twente in The Netherlands, can stand high temperatures for a long period of time. This ‘molecular sieve’ is capable of removing water out of e.g. solvents and biofuels. It is a very energy efficient alternative to existing techniques like distillation.

Even after testing during 18 months, the new membranes prove to be highly effective, while having continuously been exposed to a temperature of 150 °C. Existing ceramic and polymer membranes will last considerably shorter periods of time, when exposed to the combination of water and high temperatures. The scientists managed to do this using a new ‘hybrid’ type of material combining the best of both worlds of polymer and ceramic membranes. The result is a membrane with pores sufficiently small to let only the smallest molecules pass through.

Ceramic membranes, made of silica, degrade because they react with water and steam. In the new membrane, part of the ceramic links is therefore replaced by organic links. By doing this, water doesn’t have the chance to ‘attack’ the membranes. Manufacturing the new hybrid membranes is simpler than that of ceramic membranes, because the material is flexible and will not show cracks. What they have in common with ceramic membranes is the rapid flow: an advantage of this is that the membrane surface can be kept small.

The hybrid membranes are suitable for ‘drying’ solvents and biofuels, an application for which there is a large potential market worldwide. The main advantage of membrane technology is that it consumes far less energy than common distillation techniques.

The scientists also foresee opportunities in separating hydrogen gas from gas mixtures. This implies a broad range of applications in sustainable energy. Apart from that, the hybrid membranes are suitable for



desalinating water. Using a hybrid membrane that is much smaller than the current polymer membranes, the same result can be achieved.

The results have been achieved in a close cooperation of scientists from the Inorganic Materials Science Group of the MESA+ Institute for Nanotechnology (UT), the Energy Efficiency in Industry department of ECN and the University of Amsterdam. The invention has been patented worldwide.

The article 'Hybrid ceramic nanosieves: stabilizing nanopores with organic links' by Hessel Castricum, Ashima Sah, Robert Kreiter, Dave Blank, Jaap Vente and André ten Elshof has been published in Chemical Communications (ChemComm) of the Royal Society of Chemistry in de UK.

Adapted from materials provided by University of Twente.

<http://www.sciencedaily.com:80/releases/2008/02/080208094024.htm>

Surgical Robot Triples Accuracy Of Medical Students Training For Hip Surgery



A resurfaced hip bone with a cast of chrome alloy. (Credit: Image courtesy of Imperial College London)

ScienceDaily (Feb. 13, 2008) — Delegates at the British Society for Computer Aided Orthopaedic Surgery Conference will hear that results from a pilot study saw graduates 95 per cent more confident using this robotic technique than when using conventional surgical methods in training.

in training.

Professor Justin Cobb, Head of the Biosurgery and Surgical Technology Group at Imperial College London, conducted the trial on 32 undergraduate medical students at Imperial College London from December 2006 to December 2007. The pilot study tested whether planning before an operation, combined with the latest robotic navigation equipment could increase the success rates of students practising hip resurfacing arthroplasty procedures -- a method for correcting painful hip bone deformities by coating the femoral head with a cast of chrome alloy.

Up to 5,000 hip resurfacing operations happen each year. These operations are technically demanding and require precision and accuracy. Surgeons rely on years of experience and on different cameras, lasers and hand held tools to help them navigate during an operation.

Inexperienced surgeons often face a steep learning curve to gain the experience necessary to carry out hip resurfacing operations. Until now, this has only been gained through repeatedly performing the operations. This can cause problems because if hip bones are repaired incorrectly wear and tear occurs, requiring patients to undergo further painful and expensive corrective operations. Imperial researchers believe their method will address the issue at the undergraduate level.

Third year medical undergraduates were asked to trial a state-of-the-art robot called the Navigation Wayfinder - a new navigation tool never before used in the UK.

The Wayfinder is similar to a GPS tracking system. It helps the user to navigate during surgery by plotting correct surgical incisions. It also calculates the correct angles for inserting chrome alloy parts needed to repair hip bones.



It has twin digital arms protruding from a console. One senses the movement of surgical tools as they slice through a patient's hip area. The other takes detailed images of the bones. This information is fed into software which generates a virtual model of a patient's hip as it is being operated on. Similar to a 3D roadmap, it allows the user to plot the progress of an operation as they are performing it -- a vital technique for ensuring that it is being carried out correctly.

Professor Cobb saw the benefits of incorporating the Wayfinder into undergraduate training and developed a three step training programme.

Students used model replicas of deformed hip bones for the trial, scanned by the Wayfinder's digital arm. This information was used to create a 3D virtual model of the bone area.

The Wayfinder's computer programme developed an operation plan setting out the actions required for undergraduates to correct the hip deformity.

Students were asked to carry out a virtual operation on the 3D model of the hip. Using the tool tracking arm, they practised techniques for fastening chrome alloy on virtual deformed hip bones. This built up their confidence, technique and skill.

They were asked to perform surgery on model casts of real hip bones. By using the Wayfinder to help them navigate, undergraduates were able to attach a post to the centre of the femoral head and thread it, via a guide wire, to the femur.

Professor Cobb then asked students to perform the same operation using conventional navigation tools. One method involved the use of jigs and alignments. Similar to geometry sets, they are metal surgical guides which helped undergraduates to manually align the femoral head as they attached it to the femur.

The second method required students to operate using an optical navigation device. A camera and pinpoint lights were used to create an image of the hip on a computer screen. This was used by undergraduates for visual navigation during the procedure.

Professor Cobb compared how undergraduates performed with each different method. He found that they were three times more accurate and precise using the Wayfinder than if they used the two other conventional methods.

Clinical trials using the Wayfinder are currently being carried out at Warwick Hospital, Bath Hospital, Truro Hospital and the London Clinic. Professor Cobb believes his training method could be applied throughout the UK to improve outcomes for patients. He said:

"Our research proves that we can take untrained surgeons and make them an expert in a new technique rapidly. More importantly, we've also demonstrated that no patient has to be on an inexperienced surgeon's learning curve. This could significantly improve a patient's health and wellbeing and ensure they do not have to undergo repeat operations."

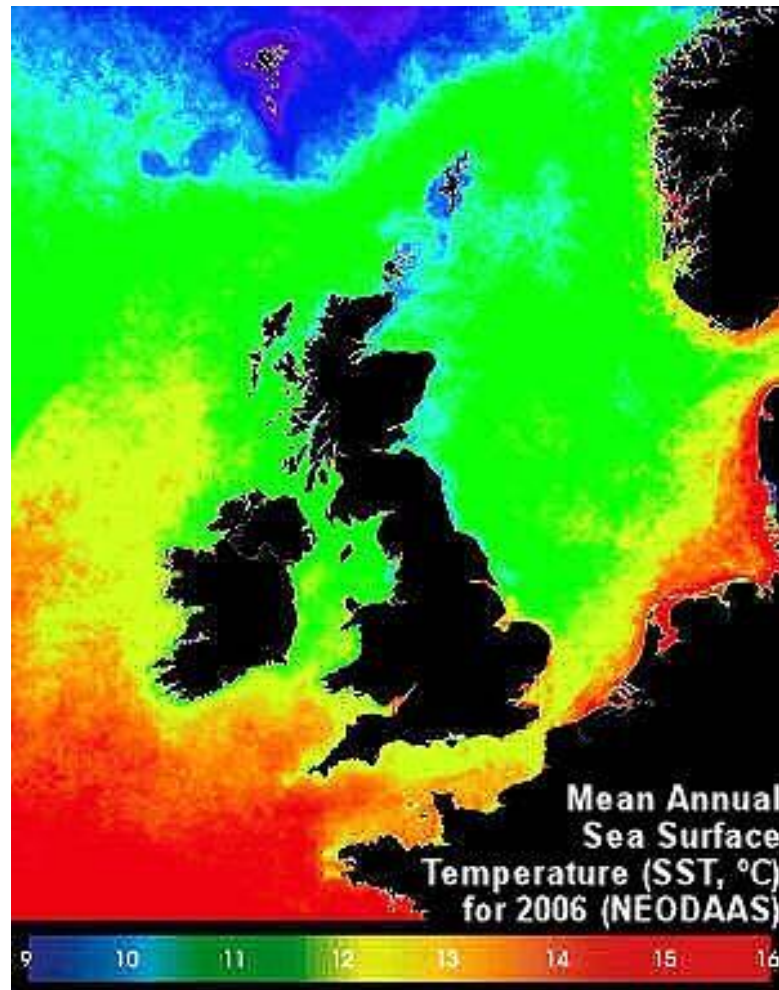
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The British Society for Computer Aided Orthopaedic Surgery Conference will be held at the Beardmore Conference Centre, Glasgow, from 7th to 9th February 2008. For further conference details go to: <http://www.caosuk.org/>.

Adapted from materials provided by [Imperial College London](#).

<http://www.sciencedaily.com:80/releases/2008/02/080207101325.htm>

Climate Change Impacting Marine Environment Surrounding UK



Climate change is having a significant impact on the United Kingdom's marine environment according to a new report. (Credit: Image courtesy of National Oceanography Centre, University of Southampton)

ScienceDaily (Feb. 13, 2008) — Climate change is having a significant impact on the United Kingdom's marine environment according to a new report. The Marine Climate Change Impacts Partnership report card 2007-08 highlights just how much climate change has affected the UK's marine environment and what the future impacts may be.

Key findings from the report include:

- 2006 was the second warmest year for UK coastal waters since records began in 1870; seven of the 10 warmest years have been in the last decade.
- Warmer winters have been strongly linked to reduced breeding success and survival in some seabird populations.
- Models predict fewer storms in future but there will be increased numbers of severe storms.
- Coastal erosion and flooding is expected to increase.
- Marine climate change is having a significant impact on the marine environment and the goods and services it provides.
- Coastal erosion is occurring along 17 per cent of the UK coastline (30 per cent of England's coastline; 23 per cent of Wales; 20 per cent of Northern Ireland; 12 per cent Scotland).
- Recent warmer conditions and associated shifts in the abundance and geographical distribution of plankton have led to reduced availability of prey fish for some seabirds, which has been strongly linked to recent poor breeding success and reduced survival rates.



- The impacts of climate change on the commercial services provided by our seas will be significant. Sea-level rise, coastal flooding, storms and bigger waves will affect ports, shipping and built structures. Fishing and fish farming will be affected by temperature change and plankton (prey) availability.

Cabinet Secretary for Rural Affairs and the Environment, Richard Lochhead, said: "Climate change, including marine climate change, is one of the most serious threats facing us today. It is a truly global issue and can only be tackled if we work together. Our seas play a vital role in regulating our climate and are a lifeline for the communities that live around them.

"Our winters are getting wetter and warmer, sea levels are rising and coastal erosion is increasing. Our marine wildlife is now having to cope with these as well as other pressures, and is beginning to suffer as a result. Our marine industries also have to cope with changes. These are happening now and we must take action."

The report was co-authored by scientists at the National Oceanography Centre, Southampton and was published January 16.

Adapted from materials provided by National Oceanography Centre, University of Southampton.

<http://www.sciencedaily.com:80/releases/2008/02/080206191952.htm>



Protein Found That Helps Nerve Cells Cheat Death Without Unwanted Side Effects

ScienceDaily (Feb. 13, 2008) — The prototypical member of the VEGF family of proteins, VEGF, has recently been shown to protect cells in the nervous system from death and degeneration. However, its clinical utility in this regard is limited, because it also induces blood vessel growth, a process known as angiogenesis.

In a new study, Xuri Li and colleagues at the National Institutes of Health, Bethesda, have revealed that the VEGF family member VEGF-B acts as a potent inhibitor of murine retinal cell death while exerting minimal angiogenic effects.

In addition to inhibiting expression of cell-death--related genes, VEGF-B was shown to reduce the death of murine retinal cells in culture models of cellular injury and in mouse models of ocular neurodegenerative disorders.

Furthermore, VEGF-B treatment inhibited brain cell death in a mouse model of stroke.

As the concentration of VEGF-B required for retinal protection did not lead to angiogenesis in the mouse retina, the authors concluded that VEGF-B might provide a new therapeutic option for the treatment of neurodegenerative disease.

Journal reference: VEGF-B inhibits apoptosis via VEGFR-1--mediated suppression of the expression of BH3-only protein genes in mice and rats. *Journal of Clinical Investigation*. February 8, 2008.

Adapted from materials provided by [Journal of Clinical Investigation](#), via [EurekAlert!](#), a service of AAAS

<http://www.sciencedaily.com:80/releases/2008/02/080207172343.htm>





High Blood Pressure Worsening In All States For Women; Begins To Stagnate For Men

ScienceDaily (Feb. 13, 2008) — Uncontrolled hypertension rates in men and women vary across the country, but all states — especially in the south and including the nation's capital — should boost blood pressure control efforts, researchers report in *Circulation: Journal of the American Heart Association*.

Uncontrolled hypertension in this study was defined as above 140 millimeters of mercury. The measurements were taken in a mobile examination clinic (MEC) and averaged. The first measurement was excluded. Those unable to visit the mobile clinic were offered a limited exam at home.

“Not much has been known about how individual states measure up when it comes to hypertension prevalence because only self-reported hypertension status has been measured at the state level,” said Majid Ezzati, Ph.D., lead author of the study and associate professor of International Health at the Harvard School of Public Health in Boston, Mass.

“In this study, we found a way to take the existing information and relatively accurately determine each state's true prevalence of uncontrolled hypertension among men and women, as well as how many lives might be saved if we do a better job of controlling blood pressure in individual states.”

Ezzati and colleagues first examined blood pressure trends nationally using the National Health and Nutrition Examination Survey and the Behavioral Risk Factor Surveillance System. They found that prevalence rates of uncontrolled hypertension had been declining for decades up to the 1990s. However, throughout the 1990s high uncontrolled hypertension rates among U.S. men began to stagnate or decline at a slower rate.

The trend among women was more alarming, with hypertension rates in the 1990s reversing and beginning to increase, researchers said.

Between the early 1990s and early 2000s, the prevalence of uncontrolled hypertension in adult women increased from 17 percent to more than 22 percent. At the same time, the rate of hypertension in men decreased from 19 percent to 17 percent. Even if blood pressure among American women had stayed at its levels of a decade ago, American women of different ages would have between 2 percent and 4 percent less heart disease and stroke, Ezzati said.

When researchers determined the prevalence in individual states they found that some are doing far worse than others. The worst uncontrolled hypertension rates in the United States are in the District of Columbia and in the South (Mississippi, Alabama, Louisiana, Texas, Georgia and South Carolina). According to recent estimates, nearly one in three U.S. adults has high blood pressure, but because there are no symptoms, nearly one-third don't know they have it.

“The prevalence of uncontrolled hypertension among men in these states hovers between 18 percent and 21 percent,” Ezzati said. “And about a quarter of adult women in these states (24 percent to 26 percent) have uncontrolled hypertension.”

The states with lower hypertension prevalence rates are Vermont, Minnesota, Connecticut, New Hampshire, Iowa and Colorado. They have rates between 15 percent and 16 percent for men and about 21 percent for women.

“We also found that in every state in the United States women have higher uncontrolled hypertension prevalence rates than men do. The difference between men and women is as low as 4 percent and as high as 7 percent,” he said.

In the 1990s, according to the study, uncontrolled hypertension for women increased the most in Idaho and Oregon (up 6 percentage points) and the least in Washington, D.C., and Mississippi (down 3



percentage points). For men, the worst-performing (smallest decline) states were New Mexico and Louisiana and the best-performing states were Vermont and Indiana.

“The variation in increases should be interpreted with caution,” Ezzati said. “We can’t tell from our study why this is happening. It could be that the states have done a better job in their public health efforts to reduce hypertension or it could be that rates are already so high that they didn’t have much higher to go.”

Researchers determined that between 2001 and 2003, deaths attributed to the higher than optimal systolic blood pressure control among females ranged from 200 to 220 per 100,000 in Minnesota and Massachusetts to 360 to 370 in Washington, D.C., and Mississippi. For males, deaths from high blood pressure were 210 per 100,000 in Colorado and Utah to 370 in Mississippi and 410 in Washington, D.C.

“It is alarming that U.S. states are experiencing worsening rates for a risk factor that is so easily controlled by lifestyle, diet and medication,” Ezzati said. “We need to look nationally, but also especially focus on those states with the highest hypertension prevalence and emphasize interventions to do better than last decade’s trends.”

“High blood pressure is the most commonly occurring preventable risk factor for heart disease and stroke,” said Dan Jones, M.D., President of the American Heart Association. “Easily applied methods for prevention and treatment are available. It is amazing that blood pressure control rates are not improving in our country. Public health officials, policy makers, health professionals, and the American public need to respond. With more exercise, better diets, and appropriate use of antihypertensive medications, this disturbing trend in low control rates can be resolved.”

Co-authors are: Shefali Oza, S.B.; Goodarz Danaei, M.D.; and Christopher Murray, M.D., D. Phil.

The study was funded by the Centers for Disease Control and Prevention (CDC) through the Association of Schools of Public Health (ASPH). Authors of the study are responsible for its content and don’t necessarily represent the official views of the CDC or ASPH.

Adapted from materials provided by American Heart Association.

<http://www.sciencedaily.com:80/releases/2008/02/080211172532.htm>



Heart Attacks Decreased After Public Smoking Ban In Italy

ScienceDaily (Feb. 12, 2008) — The number of acute coronary events such as heart attack in adults dropped significantly after a smoking ban in public places in Italy, researchers reported in *Circulation: Journal of the American Heart Association*.

Researchers in Rome compared acute coronary events in the city for five years preceding a public smoking ban with those occurring one year after the ban. They found an 11.2 percent reduction of acute coronary events in persons 35 to 64 years and a 7.9 percent reduction in those ages 65 to 74.

"Smoking bans in all public and workplaces result in an important reduction of acute coronary events," said Francesco Forastiere, M.D., Ph.D., co-author of the study and head of the Environmental and Occupational Epidemiology Unit, Department of Epidemiology, Rome E. Health Authority, Italy. "The smoking ban in Italy is working and having a real protective effect on population health."

The study was the first in Europe to show long-term health benefits of smoking bans in public places. It also was the first to consider in detail other factors such as temperature, air pollution, flu epidemics and time trends that affect acute coronary events such as heart attack.

The January 2005 comprehensive smoking ban in Italy included strong sanctions for smokers, businesses and workplace owners and managers. The prohibition included all indoor public places such as offices, retail shops, restaurants, pubs and discos.

Researchers compared the rate of acute coronary events from 2000 to 2004 to those occurring in 2005 after the ban was enforced.

Researchers identified acute coronary events from hospital discharge reports with a diagnosis of myocardial infarction or unstable angina and from the regional register of causes of deaths with diagnosis of out-of-hospital coronary deaths. The analysis was divided into three age groups: 35--64, 65--74 and 75--84 years. Researchers collected daily data on particulate matter in 40 public places and from four fixed monitors in residential areas together with temperature readings.

The indoor concentration of fine particles decreased significantly from a mean level of 119 $\mu\text{g}/\text{m}^3$ before the ban to 43 $\mu\text{g}/\text{m}^3$ one year after the ban.

During the period of the study there were changes in smoking habits such as:

- Frequency of smoking decreased from 34.9 percent to 30.5 percent in men and from 20.6 percent to 20.4 percent in women.
- Cigarette sales decreased 5.5 percent.
- While the ban resulted in a significant reduction in acute coronary events in the two younger age groups, the older group (aged 75-84 years) showed no reduction.
- When the researchers adjusted for time trends and all-cause hospitalization, the results remained statistically significant in the youngest group and in the 65--74 age group. This effect was only slightly reduced when the researchers compared the post-smoking ban data of 2005 to that from 2004.

"The older age group spends more time at home than in the workplace or public businesses," said Giulia Cesaroni, M.Sc., senior researcher at the Department of Epidemiology, Rome, Italy. "The smoking ban has a greater effect on those of working age and those who spend a lot of their time in public places."

Young people living in low socioeconomic areas seemed to have the greatest reduction in acute coronary events after the smoking ban, researchers reported. Those living in lower socioeconomic areas have worse health conditions with more risk factors for heart attack such as obesity, hypertension, diabetes and a higher rate of active smoking.



"This implies that a disadvantaged person has a higher probability of being surrounded by smokers at work and in public places unless a smoking ban is in place," Cesaroni said.

The researchers said the health benefits seen in this study probably result from a significant reduction in exposure to passive smoking. In addition, a smoking-free environment makes it easier for smokers to stop smoking.

"Since coronary heart disease is a leading cause of death in Italy, the reduction observed had enormous public health implications," Forastiere said. "It will be interesting to see if the effect of the ban is stable over time and if similar positive health effects can be detected in other places.

"While the trend is to implement smoking bans, there are still areas in the world such as some European countries, Asia, and America where smoking in public places is an important public health issue. Smoking bans should be extended to all possible countries and smoking bans in the workplace should be strongly enforced."

Other co-authors are: Nera Agabiti, M.D.; Pasquale Valente, M.D.; Piergiorgio Zuccaro, Ph.D.; and Carlo A. Perucci, M.D.

The Lazio Region Health Authority funded the study.

Adapted from materials provided by [American Heart Association](#), via [EurekAlert!](#), a service of AAAS.

<http://www.sciencedaily.com:80/releases/2008/02/080211172539.htm>



'Recordable' Proteins As Next-generation Memory Storage Materials

ScienceDaily (Feb. 12, 2008) — Move over, compact discs, DVDs, and hard drives. Researchers in Japan report progress toward developing a new protein-based memory device that could provide an alternative to conventional magnetic and optical storage systems, which are quickly approaching their memory storage capacities.

Just as nature chose proteins as the memory storage medium of the brain, scientists have spent years exploring the possibility of similarly using proteins and other biological materials to build memory-based devices with the potential for processing information faster and providing greater storage capacity than existing materials. Although a few protein-based memory materials have shown promise in experimental studies, developing such materials for practical use remains a challenge.

In the new study, Tetsuro Majima and colleagues used a special fluorescent protein to etch or "record" a specific information pattern on a glass slide. Using a novel combination of light and chemicals, the researchers demonstrated that they could "read" the pattern and subsequently erase it at will.

Thus, they demonstrated that the proteins could provide storage, playback, and erasure of information, the hallmarks of a successful memory device, the researchers say. In addition to conventional memory storage devices, the proteins also show promise for improved biosensors and diagnostic tests, they say.

The study "Protein Recording Material: Photorecord/Erasable Protein Array Using a UV-Eliminative Linker" is scheduled for the March 4 issue of ACS' Langmuir.

Adapted from materials provided by [American Chemical Society](#), via [EurekAlert!](#), a service of AAAS.

<http://www.sciencedaily.com:80/releases/2008/02/080211093841.htm>



Prions Link Cholesterol To Neurodegeneration

ScienceDaily (Feb. 12, 2008) — Prion infection of neurons increases the free cholesterol content in cell membranes. A new study suggests that disturbances in membrane cholesterol may be the mechanism by which prions cause neurodegeneration and could point to a role for cholesterol in other neurodegenerative diseases.

It is widely believed that prions (protein only infectious material) are the cause of rare progressive neurodegenerative disorders that affect both humans and animals. A prion is an infectious agent made solely of protein. However what is not known is how the prions damage brain cells (neurons).

Dr Clive Bate and colleagues from the Royal Veterinary College in the UK compared the amounts of protein and cholesterol in prion-infected neuronal cell lines and primary cortical neurons with uninfected controls. Protein levels were similar but the amount of total cholesterol (a mixture of free and esterified cholesterol) was significantly higher in the infected cell lines.

The cholesterol balance was also affected: the amount of free cholesterol increased but that of cholesterol esters reduced, suggesting that prion infection affects cholesterol regulation. The team attempted to reproduce the effects of prions on cholesterol levels, by stimulating cholesterol biosynthesis or by adding exogenous cholesterol. Both approaches resulted in increased amounts of cholesterol esters but not of free cholesterol.

The free cholesterol is thought to affect the function of the cell membranes and to lead to abnormal activation of phospholipase A2, an enzyme implicated in the depletion of neurons in prion and Alzheimer's disease.

Studies have recently shown that the controlling cholesterol levels within the brain is critical in limiting the development of neurodegenerative diseases such as Alzheimer's, Parkinson's and prion diseases, multiple sclerosis, and senile dementia. This study now gives far more specific insight into the kind of mechanisms at work. Dr Bate stated: "Our observations raise the possibility that disturbances in membrane cholesterol induced by prions are major triggering events in the neuropathogenesis of prion diseases".

Journal reference: Sequestration of free cholesterol in cell membranes by prions correlates with cytoplasmic phospholipase A2 activation. Clive Bate, Mourad Tayebi and Alun Williams. BMC Biology (in press).

Adapted from materials provided by [BioMed Central/BMC Biology](#), via [EurekAlert!](#), a service of AAAS.

<http://www.sciencedaily.com:80/releases/2008/02/080211195230.htm>

Power Shirt: Nanotechnology In Clothing Could Harvest Energy From Body Movement



Close-up image shows a pair of entangled fibers that make up a microfiber nanogenerator. Both fibers are coated with zinc oxide nanowires; one fiber is additionally coated with gold. When rubbed together, they generate electrical current. (Credit: Georgia Tech Photo: Gary Meek)

ScienceDaily (Feb. 14, 2008) — Nanotechnology researchers are developing the perfect complement to the power tie: a "power shirt" able to generate electricity to power small electronic devices for soldiers in the field, hikers and others whose physical motion could be harnessed and converted to electrical energy.

The February 14 issue of the journal *Nature* details how pairs of textile fibers covered with zinc oxide nanowires can generate electrical current using the piezoelectric effect. Combining current flow from many fiber pairs woven into a shirt or jacket could allow the wearer's body movement to power a range of portable electronic devices. The fibers could also be woven into curtains, tents or other structures to capture energy from wind motion, sound vibration or other mechanical energy.

"The fiber-based nanogenerator would be a simple and economical way to harvest energy from physical movement," said Zhong Lin Wang, a Regents professor in the School of Materials Science and Engineering at the Georgia Institute of Technology. "If we can combine many of these fibers in double or triple layers in clothing, we could provide a flexible, foldable and wearable power source that, for example, would allow people to generate their own electrical current while walking."

The microfiber-nanowire hybrid system builds on the nanowire nanogenerator that Wang's research team announced in April 2007. That system generates current from arrays of vertically-aligned zinc oxide (ZnO) nanowires that flex beneath an electrode containing conductive platinum tips. The nanowire nanogenerator was designed to harness energy from environmental sources such as ultrasonic waves, mechanical vibrations or blood flow.

The nanogenerators developed by Wang's research group take advantage of the unique coupled piezoelectric and semiconducting properties of zinc oxide nanostructures, which produce small electrical charges when they are flexed. After a year of development, the original nanogenerators -- which are two by three millimeters square -- can produce up to 800 nanoamperes and 20 millivolts.

The microfiber generators rely on the same principles, but are made from soft materials and designed to capture energy from low-frequency mechanical energy. They consist of DuPont Kevlar fibers on which zinc oxide nanowires have been grown radially and embedded in a polymer at their roots, creating what appear to be microscopic baby-bottle brushes with billions of bristles. One of the fibers in each pair is also coated with gold to serve as the electrode and to deflect the nanowire tips.



"The two fibers scrub together just like two bottle brushes with their bristles touching, and the piezoelectric-semiconductor process converts the mechanical motion into electrical energy," Wang explained. "Many of these devices could be put together to produce higher power output."

Wang and collaborators Xudong Wang and Yong Qin have made more than 200 of the fiber nanogenerators. Each is tested on an apparatus that uses a spring and wheel to move one fiber against the other. The fibers are rubbed together for up to 30 minutes to test their durability and power production.

So far, the researchers have measured current of about four nanoamperes and output voltage of about four millivolts from a nanogenerator that included two fibers that were each one centimeter long. With a much improved design, Wang estimates that a square meter of fabric made from the special fibers could theoretically generate as much as 80 milliwatts of power.

Fabrication of the microfiber nanogenerator begins with coating a 100-nanometer seed layer of zinc oxide onto the Kevlar using magnetron sputtering. The fibers are then immersed in a reactant solution for approximately 12 hours, which causes nanowires to grow from the seed layer at a temperature of 80 degrees Celsius. The growth produces uniform coverage of the fibers, with typical lengths of about 3.5 microns and several hundred nanometers between each fiber.

To help maintain the nanowires' connection to the Kevlar, the researchers apply two layers of tetraethoxysilane (TEOS) to the fiber. "First we coat the fiber with the polymer, then with a zinc oxide layer," Wang explained. "Then we grow the nanowires and re-infiltrate the fiber with the polymer. This helps to avoid scrubbing off the nanowires when the fibers rub together."

Finally, the researchers apply a 300 nanometer layer of gold to some of the nanowire-covered Kevlar. The two different fibers are then paired up and entangled to ensure that a gold-coated fiber contacts a fiber covered only with zinc oxide nanowires. The gold fibers serve as a Schottky barrier with the zinc oxide, substituting for the platinum-tipped electrode used in the original nanogenerator.

To ensure that the current they measured was produced by the piezoelectric-semiconductor effect and not just static electricity, the researchers conducted several tests. They tried rubbing gold fibers together, and zinc oxide fibers together, neither of which produced current. They also reversed the polarity of the connections, which changed the output current and voltage.

By allowing nanowire growth to take place at temperatures as low as 80 degrees Celsius, the new fabrication technique would allow the nanostructures to be grown on virtually any shape or substrate.

As a next step, the researchers want to combine multiple fiber pairs to increase the current and voltage levels. They also plan to improve conductance of their fibers.

However, one significant challenge lies head for the power shirt -- washing it. Zinc oxide is sensitive to moisture, so in real shirts or jackets, the nanowires would have to be protected from the effects of the washing machine, Wang noted.

The research was sponsored by the National Science Foundation, the U.S. Department of Energy and the Emory-Georgia Tech Nanotechnology Center for Personalized and Predictive Oncology.

Adapted from materials provided by [Georgia Institute of Technology](#), via [EurekAlert!](#), a service of AAAS.

<http://www.sciencedaily.com:80/releases/2008/02/080213133347.htm>

Dumb and Dumber: Are Americans Hostile to Knowledge?

By PATRICIA COHEN



A popular video on YouTube shows Kellie Pickler, the adorable platinum blonde from “American Idol,” appearing on the Fox game show “Are You Smarter Than a 5th Grader?” during celebrity week. Selected from a third-grade geography curriculum, the \$25,000 question asked: “Budapest is the capital of what European country?”

Ms. Pickler threw up both hands and looked at the large blackboard perplexed. “I thought Europe was a country,” she said. Playing it safe, she chose to copy the answer offered by one of the genuine fifth graders: Hungary. “Hungry?” she said, eyes widening in disbelief. “That’s a country? I’ve heard of Turkey. But Hungry? I’ve never heard of it.”

Such, uh, lack of global awareness is the kind of thing that drives Susan Jacoby, author of “The Age of American Unreason,” up a wall. Ms. Jacoby is one of a number of writers with new books that bemoan the state of American culture.

Joining the circle of curmudgeons this season is Eric G. Wilson, whose “Against Happiness” warns that the “American obsession with happiness” could “well lead to a sudden extinction of the creative impulse, that could result in an extermination as horrible as those foreshadowed by global warming and environmental crisis and nuclear proliferation.”

Then there is Lee Siegel’s “Against the Machine: Being Human in the Age of the Electronic Mob,” which inveighs against the Internet for encouraging solipsism, debased discourse and arrant commercialization. Mr. Siegel, one might remember, was suspended by The New Republic for using a fake online persona in order to trash critics of his blog (“you couldn’t tie Siegel’s shoelaces”) and to praise himself (“brave, brilliant”).

Ms. Jacoby, whose book came out on Tuesday, doesn’t zero in on a particular technology or emotion, but rather on what she feels is a generalized hostility to knowledge. She is well aware that some may tag her a



crank. “I expect to get bashed,” said Ms. Jacoby, 62, either as an older person who upbraids the young for plummeting standards and values, or as a secularist whose defense of scientific rationalism is a way to disparage religion.

Ms. Jacoby, however, is quick to point out that her indictment is not limited by age or ideology. Yes, she knows that eggheads, nerds, bookworms, longhairs, pointy heads, highbrows and know-it-alls have been mocked and dismissed throughout American history. And liberal and conservative writers, from Richard Hofstadter to Allan Bloom, have regularly analyzed the phenomenon and offered advice.

T. J. Jackson Lears, a cultural historian who edits the quarterly review *Raritan*, said, “The tendency to this sort of lamentation is perennial in American history,” adding that in periods “when political problems seem intractable or somehow frozen, there is a turn toward cultural issues.”

But now, Ms. Jacoby said, something different is happening: anti-intellectualism (the attitude that “too much learning can be a dangerous thing”) and anti-rationalism (“the idea that there is no such things as evidence or fact, just opinion”) have fused in a particularly insidious way.

Not only are citizens ignorant about essential scientific, civic and cultural knowledge, she said, but they also don’t think it matters.

She pointed to a 2006 National Geographic poll that found nearly half of 18- to 24-year-olds don’t think it is necessary or important to know where countries in the news are located. So more than three years into the Iraq war, only 23 percent of those with some college could locate Iraq, Iran, Saudi Arabia and Israel on a map.

Ms. Jacoby, dressed in a bright red turtleneck with lipstick to match, was sitting, appropriately, in that temple of knowledge, the New York Public Library’s majestic Beaux Arts building on Fifth Avenue. The author of seven other books, she was a fellow at the library when she first got the idea for this book back in 2001, on 9/11.

Walking home to her Upper East Side apartment, she said, overwhelmed and confused, she stopped at a bar. As she sipped her bloody mary, she quietly listened to two men, neatly dressed in suits. For a second she thought they were going to compare that day’s horrifying attack to the Japanese bombing in 1941 that blew America into World War II:

“This is just like Pearl Harbor,” one of the men said.

The other asked, “What is Pearl Harbor?”

“That was when the Vietnamese dropped bombs in a harbor, and it started the Vietnam War,” the first man replied.

At that moment, Ms. Jacoby said, “I decided to write this book.”

Ms. Jacoby doesn’t expect to revolutionize the nation’s educational system or cause millions of Americans to switch off “American Idol” and pick up Schopenhauer. But she would like to start a conversation about why the United States seems particularly vulnerable to such a virulent strain of anti-intellectualism. After all, “the empire of infotainment doesn’t stop at the American border,” she said, yet students in many other countries consistently outperform American students in science, math and reading on comparative tests.

In part, she lays the blame on a failing educational system. “Although people are going to school more and more years, there’s no evidence that they know more,” she said.



Ms. Jacoby also blames religious fundamentalism's antipathy toward science, as she grieves over surveys that show that nearly two-thirds of Americans want creationism to be taught along with evolution.

Ms. Jacoby doesn't leave liberals out of her analysis, mentioning the New Left's attacks on universities in the 1960s, the decision to consign African-American and women's studies to an "academic ghetto" instead of integrating them into the core curriculum, ponderous musings on rock music and pop culture courses on everything from sitcoms to fat that trivialize college-level learning.

Avoiding the liberal or conservative label in this particular argument, she prefers to call herself a "cultural conservationist."

For all her scholarly interests, though, Ms. Jacoby said she recognized just how hard it is to tune out the 24/7 entertainment culture. A few years ago she participated in the annual campaign to turn off the television for a week. "I was stunned at how difficult it was for me," she said.

The surprise at her own dependency on electronic and visual media made her realize just how pervasive the culture of distraction is and how susceptible everyone is — even curmudgeons.

http://www.nytimes.com/2008/02/14/books/14dumb.html?_r=2&ex=1360731600&en=a74c1cc6df259451&ei=5088&partner=rssnyt&emc=rss&oref=slogin&oref=slogin



Genetic Breakthrough Supercharges Immunity To Flu And Other Viruses

ScienceDaily (Feb. 14, 2008) — Researchers at McGill University have discovered a way to boost an organism's natural anti-virus defences, effectively making its cells immune to influenza and other viruses.

Their process -- which could lead to the development of new anti-viral therapies in humans -- involved knocking out two genes in mice that repress production of the protein interferon, the cell's first line of defence against viruses. Without these repressor genes, the mouse cells produced much higher levels of interferon, which effectively blocked viruses from reproducing. The researchers tested the process on influenza virus, encephalomyocarditis virus, vesicular stomatitis virus and Sindbis virus.

The research was conducted by post-doctoral fellows Dr. Rodney Colina and Dr. Mauro Costa-Mattioli, working in collaboration with Dr. Nahum Sonenberg, a Howard Hughes Medical Institute International Scholar at McGill. They worked with colleagues at l'Institut de Recherches Cliniques de Montréal (IRCM) and the Ottawa Health Research Institute (OHRI). Their results are to be published February 14 in the journal *Nature*.

"People have been worried for years about potential new viral pandemics, such as avian influenzas," Dr. Sonenberg said. "If we might now have the means to develop a new therapy to fight flu, the potential is huge."

Viruses are sub-microscopic infectious agents which can reproduce only by hijacking a cell's reproductive machinery, a process that usually leads to disease and even the death of the host organism. Interferon, in particular the type 1 interferons (IFN- α and IFN- β) suppress virus propagation. Production of type 1 interferon is controlled by the interferon regulatory protein 7 (Irf7), which researchers believe to be the "master-regulator" of interferon production in the body. The McGill researchers found that protein synthesis of Irf7 is controlled by the repressor genes called 4E-BP1 and 4E-BP2.

"In a sense, it's quite a simple story," Dr. Costa-Mattioli explained. "When you get rid of the repressors, you have more of the key protein Irf7 present, which induces an anti-viral state in the cell. You're basically removing the brakes."

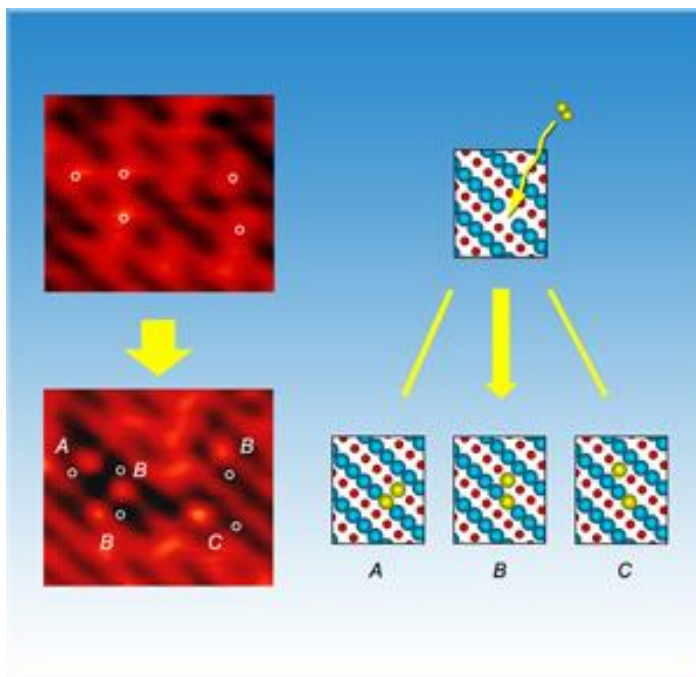
The researchers detected no abnormalities or negative side-effects resulting from enhanced interferon production in the mice, Dr. Costa-Mattioli said. Dr. Sonenberg explained that the process of knocking out genes is not possible in humans, but the researchers are optimistic new pharmaceutical therapies will evolve from their research.

"If we are able to target 4E-BP1 and 4E-BP2 with drugs, we will have a molecule that can protect you from viral infection. That's a very exciting idea." Dr. Costa-Mattioli said. "We don't have that yet, but it's the obvious next step."

Adapted from materials provided by [McGill University](http://www.mcgill.ca).

<http://www.sciencedaily.com:80/releases/2008/02/080213133330.htm>

'Hot' Oxygen Atoms On Titanium Dioxide Motivated By More Than Just Temperature



An oxygen molecule (yellow, top right) splits when encountering a vacancy on a titanium oxide surface. One atom fills the vacancy and the other can move a couple spaces away (bottom right). (Credit: Image courtesy of DOE/Pacific Northwest National Laboratory)

ScienceDaily (Feb. 14, 2008) — Like two ballroom dancers waltzing together, the two atoms of an oxygen molecule severed by a metal catalyst usually behave identically. But new research reveals that on a particular catalyst, split oxygen atoms act like a couple dancing the tango: one oxygen atom plants itself while the other shimmies away, probably with energy partially stolen from the stationary one.

Scientists from the Department of Energy's Pacific Northwest National Laboratory found the unanticipated behavior while studying how oxygen interacts with reduced titanium oxide surfaces. The chemists are trying to understand how molecular oxygen -- the stuff we breathe -- interacts with metals and metal oxides, which are used as catalysts in a variety of environmental and energy applications. Researchers worldwide are exploring the use of titanium dioxide, especially in hydrogen production for solar fuel cells.

The team was a bit surprised by the unequal sharing of resources among the oxygen atoms. "It is unique that one atom stays in place and the other one is mobile and probably gets most of the energy," says lead scientist Igor Lyubinetsky.*

Researchers have yet to determine if this short-lived extra mobility plays a role in chemical reactions, but understanding the basic chemistry might be important in processes that break down pollutants or split water to generate hydrogen.

Previous research has revealed much about how oxygen molecules interact with metals. For example, when molecular oxygen (O_2) hits a platinum surface, the platinum helps split the molecule apart and each oxygen atom zips over the surface in opposite directions, eventually sticking to the metal. Chemists call the pumped up atoms "hot" because the extra energy released by the breaking and reforming bonds gives the atoms their boost.

Titanium dioxide is not only a popular catalyst, but it also serves as a great model oxide to study basic chemistry. PNNL scientists, led by Lyubinetsky, wanted to know if molecular oxygen behaved on



titanium dioxide the way it behaves on metals such as platinum. Oxides have different properties than metals: Rust, for example, is iron oxide, which flakes off from iron metal.

To find out, the team started with a slice of titanium oxide crystal, oriented so that titanium and oxygen atoms line up on the surface in alternating strips, forming grooves of titanium troughs between oxygen rows. By heating the sample, the team created imperfections on the surface, or spots where an oxygen atom vacated its row. Using scanning tunneling microscopy, the researchers found that molecular oxygen only broke apart when it encountered a vacancy, indicating that oxygen molecules bounce along flawless titanium oxide surfaces and don't react, as expected from previous results.

The team also expected one of the atoms to make the vacancy its home, and the second to situate itself right next to its former partner. Instead, the chemists found that the second oxygen behaved like a "hot" atom and was free to move one or two crystal lattice spaces away. Out of 110 molecules the team counted, more than three quarters of the hot atoms hopped one or two spaces away before becoming mired on the surface.

"This is one of the first time chemists have looked at oxygen on metal oxides at the atomic level, and this finding was unexpected," says Lyubinetsky.

But a skittering atom requires some sort of energy to propel it, so the researchers explored how a splitting oxygen molecule divvied up its energetic resources. The team found that a free oxygen atom at room temperature (about 20 C or 68 F) is virtually immobile on a titanium oxide surface. However, previous calculations have suggested that the energy is released from the rearrangement of the bonds -- from within the oxygen molecule and between the oxygen atom and titanium surface -- and the team has concluded this might be the source of the hot atom's burst after its partner anchored itself in the vacancy: the calculated energy was about two to three times that required to get an immobilized oxygen unstuck. Lyubinetsky postulates that the hot oxygen atom uses this energy to move around on the titanium oxide surface.

The scientists are trying to better understand the mechanism because it might be significant in basic catalytic chemistry.

"This finding may be important in surface reactivity. We don't know yet," Lyubinetsky says. The chemical event could, for example, be affected by the extra energy the oxygen atom possesses. The effect might also play into whether surface oxygen atoms interfere with the chemistry between the catalyst and other reagents.

In any event, the result will keep chemists tango-ing with new questions for a long time.

The work was performed at the The Environmental Molecular Sciences Laboratory, a DOE national scientific user facility located at PNNL, with funding by DOE's Office of Basic Energy Sciences.

*The team published their results in the following paper: Y. Du, Z. Dohnalek, and I. Lyubinetsky, Transient Mobility of Oxygen Adatoms upon O₂ Dissociation on Reduced TiO₂(110), *J. Phys. Chem. C*, 2008, 10.1021/jp077677u. Published online January 5, 2008; print February 21, 2008

Adapted from materials provided by DOE/Pacific Northwest National Laboratory.

<http://www.sciencedaily.com:80/releases/2008/02/080208172134.htm>



16th century 'Venus' painting deemed too steamy for London commuters

By Associated Press | Thursday, February 14, 2008 | <http://www.bostonherald.com> | Arts & Culture

LONDON - London's transport authority has refused to display a poster featuring the 16th century "Venus" by German artist Lucas Cranach the Elder, saying it is overtly sexual.

The painting, which depicts a golden-haired, milky-skinned woman cocking her hips behind a transparent veil, is one of 70 works due to go on display at London's Royal Academy of Arts on March 8.

Transport for London, which runs the British capital's subway system, refused to display a poster of the work unless the bottom half was cropped out, the academy said.

"I think it is because she's totally nude as opposed to say she's topless," academy spokeswoman Jennifer Francis said, noting the painting was completed in 1532. "We're shocked. We wouldn't have put a poster design forward if we thought it was offensive."

She said "Venus" was chosen because it best represents Cranach's work, and the academy would be uncomfortable altering the artist's work by cropping it.

Transport for London said they turned the poster down out of respect for commuters' varied tastes.

"We have to take account of the full range of travelers and endeavor not to cause offense in the advertising we display," the organization said in a statement.

It said its rules bar advertisements that portray people "in a sexual manner" or "in an overtly sexual context."

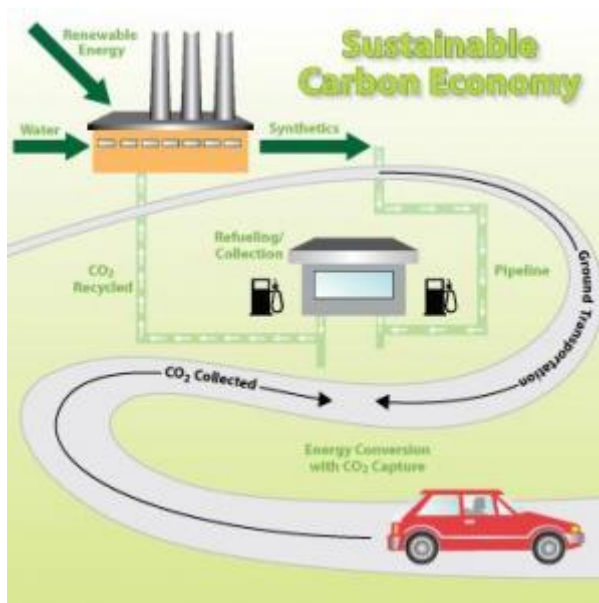
Cranach, a friend of Protestant Reformation leader Martin Luther, often painted nudes, Francis said. She added the academy saw nothing overtly sexual in the piece.

"We actually thought it was quite an innocent painting," she said.

<http://www.royalacademy.org.uk>

Article URL: http://www.bostonherald.com/entertainment/arts_culture/view.bg?articleid=1073571

Carbon Capture Strategy Could Lead To Emission-free Cars



Georgia Tech researchers envision a zero emission car, and a transportation system completely free of fossil fuels. (Credit: Image courtesy of Georgia Institute of Technology)

ScienceDaily (Feb. 14, 2008) — Researchers at the Georgia Institute of Technology have developed a strategy to capture, store and eventually recycle carbon from vehicles to prevent the pollutant from finding its way from a car tailpipe into the atmosphere. Georgia Tech researchers envision a zero emission car, and a transportation system completely free of fossil fuels.

Technologies to capture carbon dioxide emissions from large-scale sources such as power plants have recently gained some impressive scientific ground, but nearly two-thirds of global carbon emissions are created by much smaller polluters — automobiles, transportation vehicles and distributed industrial power generation applications (e.g., diesel power generators).

The Georgia Tech team's goal is to create a sustainable transportation system that uses a liquid fuel and traps the carbon emission in the vehicle for later processing at a fueling station. The carbon would then be shuttled back to a processing plant where it could be transformed into liquid fuel. Currently, Georgia Tech researchers are developing a fuel processing device to separate the carbon and store it in the vehicle in liquid form.

“Presently, we have an unsustainable carbon-based economy with several severe limitations, including a limited supply of fossil fuels, high cost and carbon dioxide pollution,” said Andrei Fedorov, associate professor in the Woodruff School of Mechanical Engineering at Georgia Tech and a lead researcher on the project. “We wanted to create a practical and sustainable energy strategy for automobiles that could solve each of those limitations, eventually using renewable energy sources and in an environmentally conscious way.”

Little research has been done to explore carbon capture from vehicles, but the Georgia Tech team outlines an economically feasible strategy for processing fossil or synthetic, carbon-containing liquid fuels that allows for the capture and recycling of carbon at the point of emission. In the long term, this strategy would enable the development of a sustainable transportation system with no carbon emission.

Georgia Tech's near-future strategy involves capturing carbon emissions from conventional (fossil) liquid hydrocarbon-fueled vehicles with an onboard fuel processor designed to separate the hydrogen in the fuel from the carbon. Hydrogen is then used to power the vehicle, while the carbon is stored on board the vehicle in a liquid form until it is disposed at a refueling station. It is then transported to a centralized site



to be sequestered in a permanent location currently under investigation by scientists, such as geological formations, under the oceans or in solid carbonate form.

In the long-term strategy, the carbon dioxide will be recycled forming a closed-loop system, involving synthesis of high energy density liquid fuel suitable for the transportation sector.

Georgia Tech settled on a hydrogen-fueled vehicle for its carbon capture plan because pure hydrogen produces no carbon emissions when it is used as a fuel to power the vehicle. The fuel processor produces the hydrogen on-board the vehicle from the hydrocarbon fuel without introducing air into the process, resulting in an enriched carbon byproduct that can be captured with minimal energetic penalty. Traditional combustion systems, including current gasoline-powered automobiles, have a combustion process that combines fuel and air — leaving the carbon dioxide emissions highly diluted and very difficult to capture.

“We had to look for a system that never dilutes fuel with air because once the CO₂ is diluted, it is not practical to capture it on vehicles or other small systems,” said David Damm, PhD candidate in the School of Mechanical Engineering, the lead author on the paper and Fedorov’s collaborator on the project.

The Georgia Tech team compared the proposed system with other systems that are currently being considered, focusing on the logistic and economic challenges of adopting them on a global scale. In particular, electric vehicles could be part of a long-term solution to carbon emissions, but the team raised concerns about the limits of battery technology, including capacity and charging time.

The hydrogen economy presents yet another possible solution to carbon emissions but also yet another roadblock — infrastructure. While liquid-based hydrogen carriers could be conveniently transported and stored using existing fuel infrastructure, the distribution of gaseous hydrogen would require the creation of a new and costly infrastructure of pipelines, tanks and filling stations.

The Georgia Tech team has already created a fuel processor, called CO₂/H₂ Active Membrane Piston (CHAMP) reactor, capable of efficiently producing hydrogen and separating and liquefying CO₂ from a liquid hydrocarbon or synthetic fuel used by an internal combustion engine or fuel cell. After the carbon dioxide is separated from the hydrogen, it can then be stored in liquefied state on-board the vehicle. The liquid state provides a much more stable and dense form of carbon, which is easy to store and transport.

The Georgia Tech paper also details the subsequent long-term strategy to create a truly sustainable system, including moving past carbon sequestration and into a method to recycle the captured carbon back into fuel. Once captured on-board the vehicle, the liquid carbon dioxide is deposited back at the fueling station and piped back to a facility where it is converted into a synthetic liquid fuel to complete the cycle.

Now that the Georgia Tech team has come up with a proposed system and device to produce hydrogen and, at the same time, capture carbon emissions, the greatest remaining challenge to a truly carbon-free transportation system will be developing a method for making a synthetic liquid fuel from just CO₂ and water using renewable energy sources, Fedorov said. The team is exploring a few ideas in this area, he added.

The research was published in *Energy Conversion and Management*. The research was funded by NASA, the U.S. Department of Defense NDSEG Fellowship Program and Georgia Tech’s CEO (Creating Energy Options) Program.

Adapted from materials provided by [Georgia Institute of Technology](http://www.sciencedaily.com).

<http://www.sciencedaily.com:80/releases/2008/02/080211134444.htm>



Urban Ecology: Taking Measure Of The Coming Megacity's Impact



Rural landscapes at a city's edge, such as above Phoenix, show changes in soils, human settlements, the diversity of plant and animal species and nearby ecosystems. (Credit: Charles Kazilek, ASU)

ScienceDaily (Feb. 14, 2008) — If you are reading this, chances are that you live in a city -- one, perhaps, on its way to becoming a megacity with a population that exceeds 10 million or more. If not, you and most of the world's population soon will be, according to global population demographics projections. What shape could these future cities take and how will their populations meet environmental and resource challenges?

Ecologist Nancy Grimm of Arizona State University and her colleagues are addressing these questions. "When we think of global change, images of melting ice caps and pasture replacing tropic rainforest come to mind," Grimm says. "What drives these changes?" In fact, much of the current environmental impact originates in cities, and with demographic transition to city life the urban footprint is likely to continue to grow."

Urban challenges face communities worldwide, with solutions lagging behind. Grimm and her colleagues promote a global perspective of urban development. Their analyses capture some of the commonalities that will face future city planners and societies, viewing cities as both drivers of and responders to environmental change. The authors chart the socio-ecological challenges and changes ahead for all cities, but particularly those in rapidly developing regions, like China and India.

These changes range from land use and cover, urban waste discharge and urban heat island effects to global climate change, hydrosystems, biodiversity and biogeochemical cycles. In all, the authors demonstrate that cities are substantive ecosystems in their own right, replete with complex human-environmental interactions and far-reaching impacts.

The article, "Global Change and the Ecology of Cities," was published in the journal *Science* on Feb. 8, 2008. Grimm's co-authors include ecologists John Briggs, Stan Faeth, and Jianguo (Jingle) Wu of ASU's School of Life Sciences; archaeologist Charles Redman, director of the ASU School of Sustainability; as



well as researchers, Nancy Golubiewski from New Zealand Centre for Ecological Economics and Xuemei Bai of CSIRO Sustainable Ecosystems in Australia.

"Cities, and the people in them, will ultimately determine the global biodiversity and ecosystem functioning," says Wu. "Sustainable urbanization is an unavoidable path to regional and global sustainability."

Cities as ecosystems

For a decade, Grimm, Redman and more than a dozen co-principal investigators have pioneered urban studies in one of the first long-term ecological research (LTER) projects designed about urban environments. One of two urban long-term projects funded by the National Science Foundation (NSF) -- the other is the Baltimore Ecosystem Study in Maryland -- CAP LTER researchers have examined the living and non-living components of a city with participation from city planners, engineers, sociologists and other scientists, revealing the dynamic nature of this "ascendant ecosystem."

"Urban areas are hot spots that drive environmental change," says John Briggs. "They are complex, adaptive socioecological systems, centers of production and consumption, in which the delivery of the ecosystems services link society and ecosystems at multiple levels."

Phoenix's rapid growth provides a platform for CAP LTER researchers, as an evolving "before" and "after" laboratory. Phoenix is the fifth largest city in the U.S., with a metro area population of more than 4 million. Phoenix's growth is emblematic of the U.S. West in general, which is expected to experience the largest percentages of population increases in the next 20 years.

"Phoenix, and cities in general, are microcosms for the kinds of changes that are happening globally," notes Grimm. "In biogeochemical cycles, for example, they show symptoms of the imbalances in nitrogen, carbon dioxide, ozone and other chemicals that they help to create globally."

Life on the edge

Cities literally are proving to be a hotbed for environmental research. Studies by urban ecologists reveal that city centers are physically hotter. Known as the heat island effect, urban and suburban temperatures are "2 to 10 degree F (1 to 6 degree C) hotter than nearby rural areas," according to the Environmental Protection Agency. This rise in temperatures translates into "increases in peak energy demand, air conditioning costs, air pollution levels and heat-related illness and mortality."

Just a one-degree rise in temperature can bump up residential water use 290 gallons per month on average for a single-family unit. However, knowledge about heat island effects also has meant innovation and the rise of new and greener technologies, such as roofing materials with a high solar reflectance and recycled rubber/asphalt composites to pave roadways.

But not all the challenges that occur in the city stay in the city. Grimm says rural landscapes at a city's edge show changes in soils, built structures, human settlements, the diversity of plant and animal species and further impacts on fringe ecosystems. The authors invoke future thinking about cities and their effects as expressed by urban planner and policy expert Robert Lang, of Virginia Polytechnic Institute and State University. Lang believes that a city's "footprint" has ballooned so that "cities are no longer independent, but represent a limited number of dominant megapolitan regions across the globe, with coalitions of urban centers built up in the intervening areas."

"What we see is that landscapes, virtually anywhere in the world, will experience the impact of the growth and operation of nearby and long distance cities," Redman says. "We need to understand the complexity of impacts that rapid global urbanization has both within urban boundaries and across landscapes at increasing distance."



How can so many environmental challenges and changes be considered in any unified way? One recent approach has been to view urban systems as organic units: organisms that take up resources and produce wastes. Though controversial, such an integrated perspective can be useful for interpreting such things as biogeochemical cycles in cities and to analyze their regional or global effects. For example, cities are point sources for carbon dioxide and other greenhouse gases, and anthropogenic nutrient deposition. Fall out from cities can come in the form of urban aerosols, including atmospheric nitrogen, such as that wafted from fast-food joints or manicured lawns.

Studies by Sharon Hall, an ecologist with ASU's College of Liberal Arts and Sciences, and Grimm find that fertilized and irrigated lawns release more nitrous oxide, a potent greenhouse gas, than the native desert soils that preceded them. Also, lawns support a more sustained, year-round production of nitrogen oxide than desert soils, which contributes to tropospheric ozone production and regional increases in photochemical smog.

"Global emissions of nitrous oxide (N₂O) and nitric oxide (NO) have increased dramatically during the last century, primarily due to human activity associated with agriculture and fossil fuel combustion," notes Hall. "We are just now discovering how urban centers figure into this equation, and how cities such as Phoenix impact surrounding landscapes, as well as contribute to larger regional or global climate."

Studies over the last 10 years by Wu and his students using geospatial analysis and computer modeling have shown that the Phoenix urban landscape has become geometrically more complex, but ecologically more fragmented. Also, urbanization-induced increases in temperature, CO₂, and nitrogen deposition will significantly affect the productivity, carbon and nitrogen cycling, and a suite of biogeochemical processes of the native ecosystems, resulting in altered ecosystem functioning and services.

Selection and the city

Biodiversity studies in cities are equally revealing. Urban environments alter species compositions, biomass, distributions and ecosystem function. Studies by CAP-LTER and other groups show that plant types and habitat patches are, somewhat counter intuitively, increased by human activity relative to wild areas and involve a socio-economic component. Wealthier neighborhoods plant more exotics and show increases in yard-to-yard heterogeneity.

Co-author, Faeth, has found that numbers of birds and arthropods like grass hoppers, jump within city boundaries -- though at the cost of a diversity of types. In addition, urban-dwelling species often flourish at the expense of indigenous species, the long-term effects of which may be reflected in altered life-history traits and, potentially, evolution. Thus, Faeth notes, cities are ecological and evolutionary arenas that create novel environments, with selective pressures that change flora and fauna, including human "fauna," and that these will become more prevalent worldwide. The article points out that, worldwide, cities alter the behaviors, physiologies, disease patterns, population densities, morphologies and genetics of city-dwelling organisms.

"Cities create novel biological communities and these communities, no matter how 'unnatural' they are, are the ones that most humans know, and in the future, will experience," Faeth says.

"Knowing how cities function, how the 'ecosystem services' they provide can be enhanced through planning and urban design, gives us a chance to improve the quality of life and the environment for animal, plant and human inhabitants of cities," Grimm says. "Although every city and its surrounding environment are different, ecological studies of those differences, and participation of ecologists in decision making, can create solutions that apply across many situations."

The NSF became an active partner in long-term urban study in 1997 with the launch of the central Arizona and Baltimore LTER programs. Since then, NSF has expanded support for urban systems research through a wide range of directorates, reflecting the complex questions at hand, encompassing biological sciences, geosciences, social, behavioral, and economic studies, and environmental research and education programs.





"Agglomerations of people in cities increasingly dominate environmental change globally, but are clearly understudied from an ecological standpoint," notes Henry Gholz, of NSF's Division of Environmental Biology. "This hampers our abilities to scale ecological information and make informed predictions of, or policies regarding, future global ecological states."

Grim future?

Urban ecological study may be multi-faceted and complex, yet it offers pivotal insight in how to navigate a sustainable urban future. As soon-to-be dominant ecosystems, cities, harbor a wealth of ideas and creative accomplishments, as they have over centuries of urban living, Grimm and her colleagues say. Moreover, increasing public understanding that cities are more than miles of roadways, steel and glass means that urban ecosystems can be managed and that costs to citizens and environments can be understood and balanced.

"The relatively young and highly interdisciplinary field of urban ecology has demonstrated how well-designed cities can actually have less overall impact on the environment than equivalent dispersed rural populations," says Jonathan Fink, director of ASU's Global Institute of Sustainability. "The kind of counter-intuitive research results described in Grimm's paper show how an ecological perspective can help urban planners and engineers find ways for society to live more harmoniously with nature."

Adapted from materials provided by Arizona State University, via EurekAlert!, a service of AAAS.

<http://www.sciencedaily.com:80/releases/2008/02/080207140801.htm>

Gray Area

Why Does Some Work by Lead Pencil Studio Look So Much Like Work by Other Artists?

by Jen Graves



It began with an e-mail and a JPEG. The e-mail was sent on August 3, 2007, by Eric Fredericksen, director of Western Bridge, the exhibition space for the art collection of Bill and Ruth True. The Trues had recently purchased a work by Lead Pencil Studio, two of Seattle's leading emerging artists. The recipient of the e-mail was their dealer, Scott Lawrimore. It read:

Hi Scott. We came across this image of Mariele Neudecker's 2000 work 'The Internal Slipping Out into the World at Large' at Barbara Thumm gallery, and am [*sic*] troubled by the resemblance between it and the LPS work Bill and Ruth are acquiring. What do you think?

Translation: Did your artists copy to make this work of art that my boss just bought?

Lead Pencil Studio (LPS) is the name used by Annie Han and Daniel Mihalyo—the defendants, as it were. They won a Stranger Genius Award in 2006, the same year they created a massive outdoor installation on the border of Washington and Oregon using a prestigious Creative Capital grant. Not long after that, they won the Rome Prize for architecture.

Mariele Neudecker was relatively unknown in Seattle until this, but a lot of people saw Lead Pencil Studio's solo show at Lawrimore Project last spring. It wasn't until after the show closed—and the Trues had purchased *Arrival at 2AM* from it—that an assistant curator at Seattle Art Museum came across images of Neudecker's *The Internal Slipping Out into the World at Large* while doing research for an unrelated exhibition.

This was the image attached to Fredericksen's e-mail. It depicted fluorescent fishing line streaming down from two Gothic windows like beams of light materialized.

In *Arrival at 2AM*, thousands of strands of light-blue nylon thread streamed down from two windows, like moonlight materialized.

The uncomfortable question stood: "What do you think?"

Lawrimore forwarded the e-mail to Han and Mihalyo, who said they'd never heard of Neudecker or seen her piece. After some back and forth, this came to seem like an unpleasant coincidence to all parties. Nobody had reason to think the artists were stealing from another artist, especially since the artists didn't know each other and there were significant differences in the ideas behind the two pieces. Plus, one was an enterable installation while the other was a smaller freestanding sculpture. Chapter closed.

A week later, Han and Mihalyo left for Rome. To the Rome Prize committee, they'd proposed to spend their expenses-free year in the city making three-dimensional portraits of Roman spaces using a laser 3-D scanning technology used by surveyors, called lidar. They've spent their career so far revealing the ways spaces are defined, and their two most well-received projects in the Northwest are *Linear Plenum* (2004),



a field of strings that filled Suyama Space, and *Maryhill Double* (2006), a full-sized skeletal copy of a remotely located museum on the border of Oregon and Washington.

But five months later, the accusation of copycatting came back.

On January 30, *Seattle Post-Intelligencer* art critic Regina Hackett posted on her blog the old JPEGs that had passed between the artists and their collectors. But this time she added a new accusation.

Hackett wrote that Lead Pencil Studio's latest work, *Without Room*, an installation currently in a North Carolina museum, looked just like an installation by Seattle artist Roy McMakin, *Lequita Faye Melvin*, that showed at the Henry Art Gallery in 2004. Both pieces involve gray furniture and both pieces, Hackett believes, are referencing the modernist monochrome reliefs of Louise Nevelson. "But Lead Pencil's use of Nevelson is precisely the same as Roy McMakin's. It's McMakin's move, his field and his plow," she wrote.

Hackett continued: "Maybe Lead Pencil's Annie Han and Daniel Mihalyo hadn't seen the Neudecker. I know that they've seen Roy's work. He and they all live in Seattle, which is not that big a town. As I'm typing this, for instance, e-mails are circulating in Seattle art circles that make the same comparisons and draw the same conclusions. Just as I was thinking about it, I realized I had plenty of company."

This unnamed company included important people. At the top of the list: Seattle Art Museum's modern and contemporary curator Michael Darling. "There's a lot of things that look like other things in their work," Darling said of Lead Pencil Studio in a phone interview last week.

Darling may have some cause to take offense at the resemblance to McMakin's work, because he has had a long and close relationship with it and respect for it. Five years ago, when he was at the Museum of Contemporary Art in Los Angeles, he curated an exhibition of McMakin's work. That retrospective's centerpiece was *Lequita Faye Melvin*, a gathering of gray furniture named after McMakin's grandmother, representing the artist's memory of her belongings.

It isn't only the McMakin and the Neudecker overlaps that have left Darling cold on Lead Pencil Studio, he said. They also use the same type of webby metal as British sculptor Antony Gormley.

"It starts to smack of coattail-ism," Darling said. "To use that other person's aura in a self-beneficial way—that's when it starts to seem derivative. Those examples make me suspicious. What's in it for an artist to do something that somebody's already done?"

At this second revelation, the Trues faced an especially complicated situation. They don't have a personal connection to Lead Pencil Studio, but they do own Lead Pencil's *Arrival at 2AM*. On the other hand, if the Trues are identified with any single artist, it's McMakin. McMakin designed Western Bridge, as well as the Trues' home in Madison Park and much of their furniture. In fact, they've hesitated to buy pieces by other artists who work with furniture, because they know those might be mistaken in their environs for McMakins.

The other day at Western Bridge, I asked Bill True how he felt about the similarities between Lead Pencil Studio's works and McMakin and Neudecker's works.

He hesitated. He didn't feel good.

"Just looking at the JPEGs—that first glance—it's too close," he said. "In my mind, all of the pieces are tainted."

He added, solemnly, as if this were the worst part, "I don't think anyone did anything wrong."

...

What's wrong and what's right in terms of originality and art is a matter of serious debate. If no one did anything wrong, then how can a work of art be tainted? Which is worse, theft or ignorance?

"We're surrounded by signs; our imperative is to ignore none of them," Jonathan Lethem wrote in a *Harper's* essay last year called "The Ecstasy of Influence: A Plagiarism," an essay comprising sentences lifted from other places. In one of the few sentences in that essay that wasn't sourced, Lethem proclaimed: "Art is sourced."

The point is that there is no such thing as a "clean" piece of writing or art. An artist's only imperative is to be informed about what came before, Lethem argued, in order to steal *better*. Outright, daylight theft is best, Fredericksen agreed recently. Accidental copying—the kind Lead Pencil were guilty of with the Neudecker piece—is worst, precisely because it is so uncanny, Fredericksen said: "It's a doppelgänger. That's a classic horror story."

Except what constitutes a copy? Is there a difference in art akin to the DNA difference between a fraternal and an identical twin? What about mere siblings? If artists acknowledge influences more overtly rather than less, does it protect them? Cases of artworks looking intentionally similar through acknowledged influence or overt appropriation are obvious and well documented, but cases of artworks looking *accidentally similar* are not all that uncommon, either—and present more complicated problems.

In the case of Originality vs. Lead Pencil Studio, what muddies matters is that the debate revolves around works of art the people involved in the debate haven't seen in person. When this happens, the narrative easily turns to issues of loyalty, of curator versus curator and critic versus critic. (After all, Hackett and I are competing critics, and I have found much to champion in Lead Pencil Studio's body of work. Also, I haven't seen McMakin's *Lequita Faye Melvin*.) In the absence of personal experience, you're more likely to believe an artist whose work you believe *in*, but professional loyalty should not be confused with nepotism: It comes from a place of having truly been convinced by an artist's work.

Beth Sellars, curator of Suyama Space, has a similar relationship to Lead Pencil Studio as Darling has to McMakin. She says Lead Pencil Studio's critics "need to back off," and to consider their whole body of work instead of isolated pieces.

"Did Michael Darling go to Maryhill?" she asked. "Has he actually talked to Lead Pencil about their North Carolina piece, or seen it? Has anyone actually seen the Neudecker?"

The answers to those questions are no, no, and no. The general half-knowledge of these works seems to argue for a certain amount of circumspection when it comes to making sweeping judgments. Asked about *Maryhill Double*, Darling readily conceded that he has only seen one show of Lead Pencil Studio's work: "I'm not a bona fide expert on it," he said.

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But that doesn't make the resemblances any less striking. JPEGs of McMakin's *Lequita Faye Melvin* show close-ups of gray-painted furniture—dressers, lamps, chairs. JPEGs of Lead Pencil Studio's *Without Room* show gray-painted furniture and clutter set on a platform in the middle of a gallery.

So what happened?

Reached by phone in Rome, Han and Mihalyo said they didn't go to McMakin's show when it was in Seattle, although Mihalyo went to McMakin's lecture. They were in disbelief at the charges.

"Artists would never redo work that's already been done," Han said. "It's just not in our interest. Also, for an artist to take something from another artist who lives in the same city as us, who we like, and who is collected by the same collector? We'd have to be pretty stupid to do this."

To them, the comparisons are surface level, based on close-up JPEGs that make the pieces look similar when they're really not. As with the Neudecker case, *Lequita Faye Melvin* and *Without Room* have significant conceptual differences.

Lequita Faye Melvin is a reconstruction by hand of the furniture McMakin remembers from his grandmother's home. Some of the furniture is out of proportion, as if seen from the perspective of a child. When *Lequita Faye Melvin* was shown at the Henry in 2004, the objects were displayed in a jumble, the way furniture is pushed together when it's in storage. If a private collector buys *Lequita Faye Melvin*, McMakin intends the objects to be scattered throughout the collector's own personal belongings. (It's for sale at McMakin's New York gallery, Matthew Marks; James Harris Gallery represents McMakin in Seattle.)

Without Room, at the Weatherspoon Art Museum of the University of North Carolina at Greensboro, is an exact replica of the crowded living room of an anonymous woman who lives in Greensboro. The woman was selected from a pool of volunteers who responded to an ad by Lead Pencil Studio calling for someone who lives in a small space. Museum staffers went into her home and documented every object, then the



artists scoured second-hand stores for precise approximations of all of her belongings (a Michael Jackson doll was substituted for a Pee Wee Herman doll). They coated the objects gray and reconstituted the crowded room—without walls—on a platform. A gray rectangle painted on the ceiling demarcated the room. The only critic to review the show, Travis Diehl, writing for the campus newspaper, described it as "a living room rendered lifeless."

The difference: Lead Pencil Studio's *Without Room* was a precise, jam-packed space designed by real use. McMakin's *Lequita Faye Melvin* was a jumbled, evocatively imprecise memory closet.

On the phone from Rome, Lead Pencil Studio said they count McMakin as an artist they admire, but not really as an influence. For *Without Room*, they cited other influences, including Margaret Roberts, an Australian installation artist who uses swaths of paint to alter interior spaces, and the lidar technology they're using in Rome, which translates built environments into flat, unspecific gray surfaces. (They've been on the other side of this scenario, too. In 2004, the same year Lead Pencil Studio filled Suyama Space with green and white filaments, Predock Frane Architects filled a gallery at the Venice Biennale with green and white filaments. Lead Pencil Studio decided to chalk it up to coincidence.)

McMakin has mixed feelings.

"When I saw those pictures [of *Without Room*], it felt peculiar—to use an incredibly vague word deliberately," McMakin said in a phone interview. "I think art is a very fluid thing, and I don't know them as artists in a very deep way. I don't know. But what they're doing is a setup for things feeling odd to people, not a setup by intentions but by circumstances."

As for Neudecker, who is based in Britain, she responded to the comparisons by e-mail. Her windows explore romanticized imagery, she wrote. They are adapted from a nostalgic black-and-white postcard of light streaming through windows at Grand Central Station. Lead Pencil Studio's windows, when exhibited at Lawrimore Project, were hung so that the angle of the strings corresponded directly to the way light would enter Lawrimore Project if the windows were real. Lead Pencil Studio were Lawrimore Project's architects; they were commenting on their own architecture.

"Really interesting question. And sort of happens a lot, I reckon," Neudecker wrote. She said she couldn't pass any judgment without being able to compare the pieces in person.

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The two cases that have been lumped together are not the same, said Liz Brown, chief curator at the Henry Art Gallery, and the lumping together leads her to think that, on some level, there's some "joyful backlash" going on against Lead Pencil Studio. She has seen nearly all of their work, with the exception of *Without Room*, and says that these appear to be surface-level similarities that don't diminish her opinion of their work overall.

Her take on the difference between the two cases is not what you'd expect. Given the relative obscurity of Neudecker and the relative fame (especially in Seattle) of McMakin, Brown said, Lead Pencil can be excused for not knowing about Neudecker's windows, but they can't be excused for not knowing about McMakin's gray furniture.

It boils down to this: They don't have to subject their ideas to a Google search before they make them—although that might be an easy way to avoid a controversy like this—but they do have to take into account a reasonable person's expectation of their most attentive audience's base of knowledge.

Back to Bill True's double assertion that something felt wrong, but that no one did anything wrong. The catch is in how wrong is defined. What did Lead Pencil do wrong, according to Brown?

It was not going to the McMakin show in the first place, especially since he is a leading artist-architect in Seattle, working in territory adjacent to theirs. And it wasn't exactly *wrong*, but certainly inadvisable, she said.

When I put the idea that artists are unaware of context at their own risk to Bill True, he put his head in his hands. "I do want to think of artists slaving away alone in their studios!" he said. "I don't want them to have to run everything through the filter of what's out there!"



It's what Sellars said: "If artists had to worry about what was out there in the world, they wouldn't do anything."

Then again, Sellars and Darling do agree on one point: When they see things that look similar to other things, they stop paying attention. Last year, the artists Hadley + Maxwell had the same reaction to their own work. They made a white flag at half mast for an installation at the Contemporary Art Gallery in Vancouver, B.C., and when they saw it repeated, coincidentally, by other artists around the world, they considered their own idea weaker for it, something less well-authored because it was more likely to pop up.

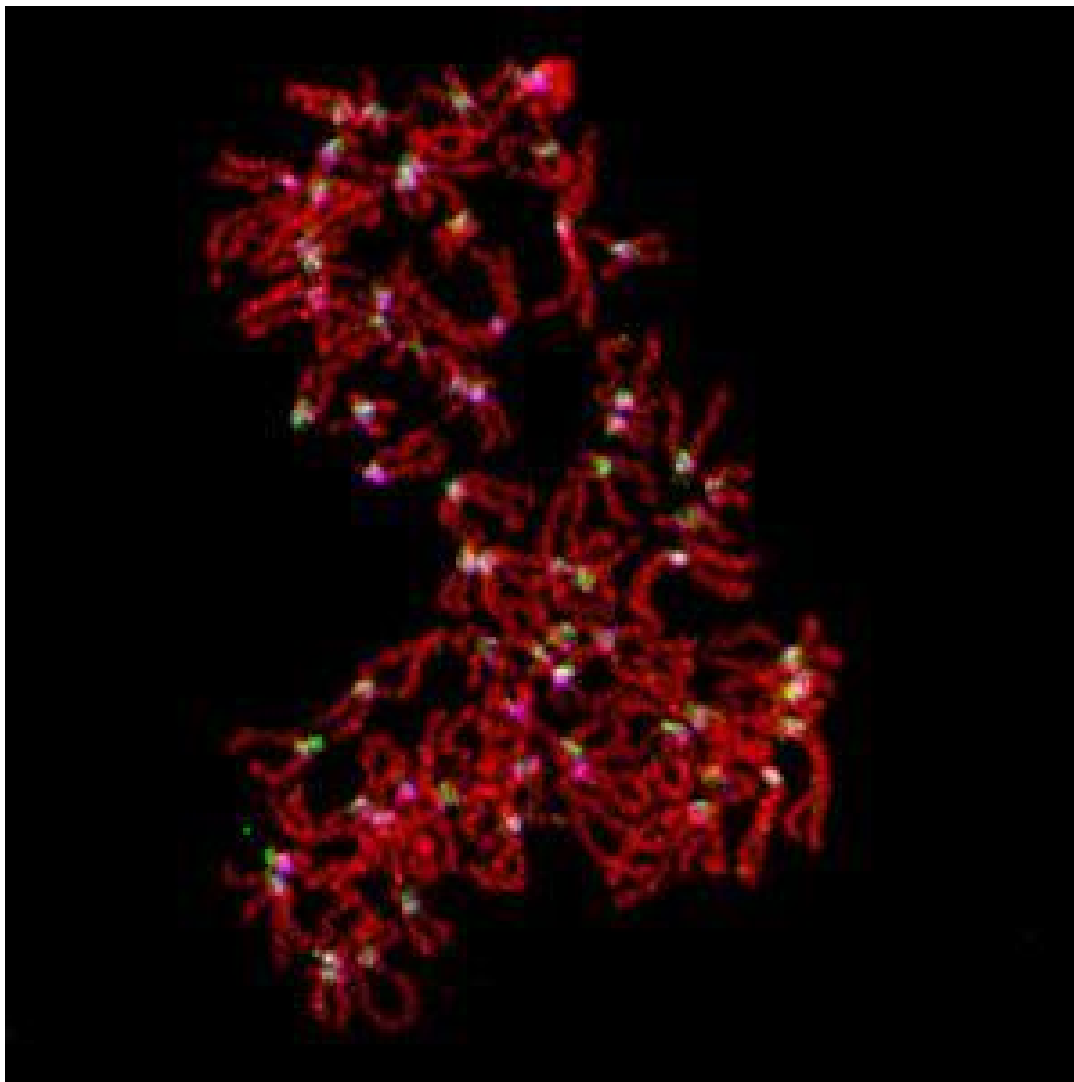
It seems fair to say that some resemblances can be avoided by knowledge, and some can't. It also stands to reason that if artists should be held responsible for what they see and don't see, so should commenters on their work. 🌱

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<http://www.thestranger.com/seattle/Content?oid=511123&mode=print>



'Molecular Glue' Cohesin Acts As Regulator Of Gene Expression



Protein complex cohesin. (Credit: IMP)

ScienceDaily (Feb. 13, 2008) — Ten years ago, researchers at the IMP - a basic research institute in Vienna - discovered a fundamental and amazingly plausible mechanism of cell division. They identified a protein complex, which, as a ring-shaped molecule, slides over the doubled chromosomes and holds precisely these together until the time they again separate. Because of its function as molecular glue, the protein complex was given the name cohesin.

In the working group of Jan-Michael Peters, Senior Scientist at the IMP, the molecule was continually monitored over the last ten years. Now Peters and his colleague, Kerstin Wendt, in cooperation with Katsuhiko Shirahige from the Tokyo Institute of Technology, were able to find evidence of another, also essential function of cohesin. As the researchers report in the journal *Nature*, the molecule acts as a regulator of gene expression, and therefore plays an important role in the reading of genes. The molecule fulfills this function entirely independently of its thus far known activity.

Various inhibiting and promoting elements within the genome affect whether genes can be read in a particular situation and how intensively this process proceeds. Promoters initiate the reading process, whereas enhancers strengthen it, and silencers suppress it. The combination of these factors must be very finely tuned. The areas that are each influenced by the regulators are separated from each other by so-



called insulators. It has now been ascertained at the IMP for the first time ever that cohesin is necessary for the function of such insulators.

This discovery not only enriches basic research by contributing to further fundamental knowledge. It should also be of medical interest: a number of rare but serious disorders can be traced back to mutations in cohesin. If the regulation of gene expression proceeds abnormally, developmental disorders are the result. The range of symptoms extends from subtle and hard-to-diagnose changes to massive, physical and cognitive impairments. One of the more well-known disorders of this kind is called Cornelia de Lange Syndrome. Affected persons suffer from numerous anomalies and malformations. A causative treatment is not available.

"We cannot cure the disease, but we now know the molecular mechanisms that cause it. This helps us to better understand the disorder and its symptoms. Moreover, we expect that our findings will stimulate new exciting research", stated Jan-Michael Peters.

A valuable resource for this has already been created by the researchers in the course of their work: they have systematically searched the entire human genome for cohesin binding sites -- that is, the areas where cohesin is effective. Thus, the first genome-wide cohesin map in a mammalian species was developed. The database is open to the scientific community.

The paper "Cohesin mediates transcriptional insulation by CCCTC-binding factor" (Kerstin S. Wendt et al.) was published online on January 30, 2008 in Nature.

Adapted from materials provided by Research Institute of Molecular Pathology.

<http://www.sciencedaily.com:80/releases/2008/01/080131101756.htm>

Guardian Unlimited: Arts blog - books

Do Jewish novelists write Jewish novels?

Robert Cohen

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http://blogs.guardian.co.uk/books/2008/02/can_you_spot_a_jewish_writer.html



Odd ones out: Franz Kafka, Grace Paley, Bernard Malamud, Philip Roth, Saul Bellow. Photographs: Corbis/Getty

"As a little bit of musk fills an entire house," wrote Osip Mandelstam, "so the least influence of Judaism overflows all of one's life."

Upon reading of the lavish new Sami Rohr prize, given to the year's best work of Jewish fiction or non-fiction, this quote was the second thing that came to mind. The first thing was the \$100,000 that went with it, and the need to start writing a new Jewish novel of my own, post-haste.

But in what *sense* would it be Jewish? This is a perennial but weirdly slippery question among hyphenated writers, so answer-averse it's almost rhetorical, almost boring. What makes a novel Jewish? The short answer, of course, is that the maker does. Say you are the real, chosen thing, historically and genetically certifiable. Say you have the nose, the one-generation-old name, the ironic, self-deprecating temperament, the face in which can plainly be seen the entire map of Poland. (A Jew, says Sartre, is someone others take as a Jew.) According to this argument, whatever this person - let's call him, oh, RC - does, is going to be essentially Jewish, in the same way that Mandelstam's house is going to always have that "little bit of musk."

This was how a number of Jewish-American writers of my own generation started out. We'd read enough of our forebears to see that we were coming in late, and would be only back-row singers in the diaspora chorus, fashioning our cunning little fugues of internal exile, turning Kafka's lament - "What have I in common with the Jews? I have nothing in common even with myself" - into our own (anti-)national anthem.



The great ones before us had been memorialised in Irving Howe's anthology of Jewish American Stories. Singer's eros, Paley's wit, Bellow's learning, Elkin's rage, Malamud's mournfulness, Roth's ferocity, Grade's philosophical balance, Weidman's haunting world of Bartleby-like fathers, sitting in the dark ... all wrestling with their patriarchal angels, struggling (you could feel it in the nervous, visceral energies of the prose) to free themselves from, among other things, labels like Jewish-American in the first place, and anthologies too, with their gluey bindings. ("The reason one becomes a poet," writes Mandelstam's own ex-girlfriend, Marina Tsvetaeva, "is to avoid being French, Russian, etc., in order to be everything").

Every line in Howe's anthology felt alive, heterodox, and improvisational, charged with that singular, Yiddish-inflected music, at once embracing and at war with it too, as if in some Oedipal process of fusion and fission, of tearing loose and re-assemblage. Clearly for the writers of the previous generation, the second side of the hyphen, the American side, *mattered*. It had weight, consequence, shock value. In any case it was a Subject. But to see it that way requires an outsider's lens ("a state of useful discontent," Howe calls it, though I prefer Danilo Kiš's phrase: "a troubling strangeness").

The Jewish writers who came after were raised inside. Most of us weren't shamed by our immigrant parents or chased in fear of our lives down the mean streets. We were suburban kids, bred with a tenacious but sentimental and also highly confused tribalism, a sense of the Chosen as a kind of embattled, under-funded, small-market baseball team, one whose fortunes, for all the media attention we generated, were forever suspended precipitously over an abyss. Only the financial and spiritual loyalty of the community would keep the franchise afloat.

We were two generations removed from a coherent communal identity. Sunday school was a joke, Hebrew school a *bad* joke. And let's not go into the bar mitzvahs. After a dozen years of study my own comprehension of Judaic law was a lamentable pastiche, a crazy-quilt of slogans and exhortations, easily remembered, easily ignored - Never Again! Next Year in Jerusalem! Paul Newman's Really Jewish! - accompanied by a tentative understanding that somewhere in the coiled scrolls of the Torah was a mandate that stipulated, on days of particular solemnity, the suspension of alternate-side-of-the-street parking.

So perhaps the stories we wrote would not be Jewish-American, strictly speaking, but American-Jewish instead. Or both. Or neither. After all, we may have been children of Bellow Roth Malamud Paley, but we also had a number of quirky and influential aunts and uncles from around the globe, Jorge and Italo, Tom, Flannery, the Dons, Gabe down in Colombia, jockeying for space at the family table. Besides, Bellow and Roth, we knew, hadn't grown up reading Bellow and Roth - they'd read Dostoevsky, James, Flaubert, Céline.

The Jewishness of the great Jewish-American laureates was, as Leslie Fiedler has pointed out, more than a little vestigial to begin with. This made us vestiges of vestiges. So what use were hyphens to us? ("*Foo to all these categories!*" says Herzog.) Our task was not to revisit the material of the previous generation, but to write the truth of our own experience, such as it was. Our own singular reactions to our own singular reality. This was what it meant to be "post-aculturated" - to steer a course between Nostalgia and Nothingness, between earnest "treatments" of the vanished world and frivolous satiric explorations of western anomie, which was rapidly performing its own vanishing act right before our eyes.

One can see the difficulties and rewards of steering such a course in any list you want to make of contemporary "Jewish" writing. The failures outnumber the successes, but then that's always the way with the novel, any novel. No one sets out to be a "Jewish writer", just as no one sets out to win \$100,000 prizes: you are what you are, you do your best, you take what comes, the rest is the madness of art and all that. There's only one label that really matters, only one adjective a writer wants to precede their name, and it's of course a very simple one, and as secular as they come: great.

http://blogs.guardian.co.uk/books/2008/02/can_you_spot_a_jewish_writer.html.printer.friendly

Heavy Cell Phone Use Linked To Cancer, Study Suggests



An Israeli scientist has found a link between cell phone usage and the development of tumors. (Credit: iStockphoto)

ScienceDaily (Feb. 15, 2008) — An Israeli scientist, Dr. Siegal Sadetzki, has found a link between cell phone usage and the development of tumors.

Dr. Sadetzki, a physician, epidemiologist and lecturer at Tel Aviv University, published the results of a study recently in the American Journal of Epidemiology, in which she and her colleagues found that heavy cell phone users were subject to a higher risk of benign and malignant tumors of the salivary gland.

Those who used a cell phone heavily on the side of the head where the tumor developed were found to have an increased risk of about 50% for developing a tumor of the main salivary gland (parotid), compared to those who did not use cell phones.

The fact that the study was done on an Israeli population is significant. Says Sadetzki, "Unlike people in other countries, Israelis were quick to adopt cell phone technology and have continued to be exceptionally heavy users. Therefore, the amount of exposure to radiofrequency radiation found in this study has been higher than in previous cell phone studies.

"This unique population has given us an indication that cell phone use is associated with cancer," adds Sadetzki, whose study investigated nearly 500 people who had been diagnosed with benign and malignant tumors of the salivary gland.

Controlled Study Reveals Link

The study's subjects were asked to detail their cell phone use patterns in terms of how frequently they used one, and the average length of calls. They were compared to a sample of about 1,300 healthy control subjects.

The study also found an increased risk of cancer for heavy users who lived in rural areas. Due to fewer antennas, cell phones in rural areas need to emit more radiation to communicate effectively.



Sadetzki predicts that, over time, the greatest effects will be found in heavy users and children.

While anecdotal evidence has been substantial, the consistency of the results of this study support an association between cell phone use and these tumors. The risks have been hard to prove, mainly due to the long latency period involved in cancer development, explains Sadetzki.

Keep Calling but Call Smarter

Today it is estimated that more than 90% percent of the Western world uses cell phones. As the technology becomes cheaper and more accessible, its usage by a greater number of people, including children, is bound to increase.

"While I think this technology is here to stay," Sadetzki says, "I believe precautions should be taken in order to diminish the exposure and lower the risk for health hazards." She recommends that people use hands-free devices at all times, and when talking, hold the phone away from one's body. Less frequent calls, shorter in duration, should also have some preventative effect.

While she appreciates the ease of communication that cell phones allow between parents and their children, Sadetzki says that parents need to consider at what age their children start using them. Parents should be vigilant about their children's using speakers or hands-free devices, and about limiting the number of calls and amount of time their children spend on the phone.

"Some technology that we use today carries a risk. The question is not if we use it, but how we use it," concludes Sadetzki.

Sadetzki's main research on this new study was carried out at the Gertner Institute for Epidemiology and Health Policy Research at the Sheba Medical Center. Her research is part of the international Interphone Study, which attempts to determine an association between cell phones and several types of brain and parotid gland tumors.

Adapted from materials provided by Tel Aviv University.

<http://www.sciencedaily.com:80/releases/2008/02/080214144349.htm>

Reducing Nutrient Pollution In Feeder Streams: How To Prioritize Restoration Efforts



Muddy Branch Creek, small tributary of Potomac River in Maryland. Small streams (1st--3rd order) with considerable nitrogen loads delivered during low to moderate flows offer the greatest opportunities for nitrogen removal. (Credit: Michele Hogan)

ScienceDaily (Feb. 15, 2008) — To help resource managers improve the health of coastal waters degraded by nutrient pollution, a group of scientists has developed a framework for prioritizing stream restoration efforts aimed at reducing the amount of nitrogen flowing downstream. The framework will allow practitioners to make better informed decisions regarding the design and implementation of restoration projects, which is critical for decreasing the downstream movement of nitrogen.

"Unlike previous research focusing on removing nitrogen before it reaches streams, we are investigating innovative ways to reduce excess nutrients while the water is flowing to its ultimate destination," said Dr. Margaret Palmer of the University of Maryland Center for Environmental Science. "By combining this type of restoration technique with more traditional measures -- like streamside forest buffers -- we should be able to help nature help us by using some of the excess nitrogen before it flows downstream."

Stream restoration has become increasingly popular across the country, yet efforts to quantify the actual amount of nitrogen removed by these costly projects are only just beginning. By providing natural resource managers with advice for prioritizing and designing projects aimed at reducing the downstream flux of nitrogen, the researchers hope to help local, state and federal restoration officials make larger nutrient pollution reductions with the limited amount of available funds.

The framework is based on identifying areas where large amounts of nitrogen loads are delivered to local streams and are then transported downstream without being used by the local ecosystem. Small streams (1st--3rd order) with considerable nitrogen loads delivered during low to moderate flows offer the greatest opportunities for nitrogen removal. The authors suggest restoration approaches that increase in-stream carbon availability, contact between the water and stream sediments, and connections between streams and adjacent terrestrial environments will be the most effective. There is strong scientific



evidence that restoration projects are more likely to be successful when properly designed using such a framework.

This research is published in the online version of the journal *Frontiers in Ecology and the Environment*.

This research which was led by Palmer and her graduate student, Laura Craig, was supported by the Maryland Power Plant Restoration Program and Versar, Inc. and the US EPA's National Center for Environmental Research. The article, "Stream restoration strategies for reducing river nitrogen loads," represents the consensus views of leading stream researchers from eight U.S.-based institutions.

Adapted from materials provided by University of Maryland Center for Environmental Science, via EurekAlert!, a service of AAAS.

<http://www.sciencedaily.com:80/releases/2008/02/08021111313.htm>



Heat Treatment Process Supplies Stronger Die Cast Parts



A display of three test castings, which, from left to right, are: 1. As cast (left), 2. Conventional heat treatment (middle), 3. Heat treated using the new procedure (right). (Credit: Mark Fergus, CSIRO)

ScienceDaily (Feb. 15, 2008) — Car components with doubled mechanical strength, higher fatigue resistance and improved energy absorption are the result of a revolutionary CSIRO heat treatment process for high pressure die casting (HPDC) of aluminium.

“Our heat treatment methods offer major improvements in tensile mechanical properties and enhancement of a range of other material properties for HPDC components,” says metallurgist Dr Roger Lumley of the Light Metals Flagship.

“Components treated with the new process do not show surface blistering or dimensional changes, they retain an as-cast appearance.”

Surprisingly, fatigue resistance of aluminium HPDC components heat-treated with the new process can be as high as for some wrought aluminium products, tending towards limiting behaviour usually observed in steel.

The new procedures may also substantially raise energy absorption during fracture, which has significant implications for crash-sensitive structural components made by high pressure die-casting.

For example, one common secondary alloy almost doubles in energy absorption, when heat treated specifically for this purpose.

“Our heat treatment methods offer major improvements in tensile mechanical properties and enhancement of a range of other material properties for HPDC components,” says metallurgist Dr Roger Lumley of the Light Metals Flagship.

“We envisage that this will make it possible to use HPDC components more widely in load carrying structural and safety applications,” Dr Lumley says.

Additionally, treated parts exhibit thermal conductivity about 20 per cent above their as-cast status, meaning that for engine or transmission applications heat can be transferred or removed more efficiently and quickly.

Potentially, since heat extraction operates more effectively, heat-treated HPDC parts could operate with lower amounts of fluid in cooling and lubrications systems.

The heat treatment process can easily be implemented in existing manufacturing facilities using conventional heat treatment equipment such as continuous belt furnaces, fluidised beds or furnace systems designed specifically for rapid heat treatment.



“It’s an attractive option because the HPDC process is more cost-effective than other manufacturing methods in mass production, and the net increase in design strength post-treatment may allow castings to be made using up to 30 per cent less metal. As a result, there is significant potential for cost reduction per part,” Dr Lumley says.

The researchers have also recently discovered a range of HPDC aluminium alloy compositions that display extraordinarily rapid strengthening behaviour, which has major cost and energy usage implications in manufacturing.”

These alloys can be heat treated to high strength levels during a total cycle time of only 30 minutes and develop properties superior to conventional aluminium casting alloys requiring heat treatment in thermal cycles of up to 24 hours.

The CSIRO-led Light Metals Flagship is now seeking partners for a published case study.

“Following our success with evaluations conducted on HPDC parts up to more than 30kg, we would like to hear from OEM or Tier 1 suppliers who would be interested in submitting a component for heat treatment, and jointly publishing the results as a case study,” Dr Lumley said.

Technical data sheets, providing test results after treatment with the new process for a range of aluminum alloys under various tempering conditions, are available at: Heat treatment of high-pressure die-castings

Adapted from materials provided by [CSIRO Australia](#).

<http://www.sciencedaily.com:80/releases/2008/02/080212095458.htm>

Ocean Dead-Zones May Be Linked To Global Warming



A review of all available ocean data records concludes that the low-oxygen events which have plagued the Pacific Northwest coast since 2002 are unprecedented in the five decades prior to that, and may well be linked to the stronger, persistent winds that are expected to occur with global warming. Oxygen-depleted waters in the 'Dead Zone' are incapable of sustaining many types of aquatic life. (Credit: Courtesy of Kerry St. Pe)

ScienceDaily (Feb. 15, 2008) — A review of all available ocean data records concludes that the low-oxygen events which have plagued the Pacific Northwest coast since 2002 are unprecedented in the five decades prior to that, and may well be linked to the stronger, persistent winds that are expected to occur with global warming. In a new study to be published Feb 15 in the journal *Science*, researchers from Oregon State University outline a "potential for rapid reorganization" in basic marine ecosystems and the climatic forces that drive them, and suggest that these low-oxygen, or "hypoxic" events are now more likely to be the rule rather than the exception.

"In this part of the marine environment, we may have crossed a tipping point," said Jane Lubchenco, the Wayne and Gladys Valley Professor of Marine Biology at OSU, and the lead scientist for PISCO, the Partnership for Interdisciplinary Studies of Coastal Oceans.

"Levels of oxygen in the summertime have suddenly become much lower than levels in the previous 50 years," Lubchenco said. "And 2006 broke all records, with parts of the shallow shelf actually becoming anoxic, meaning that they lacked oxygen altogether. We've never seen that before."

The rapid and disturbing shift of ocean conditions in what has traditionally been one of the world's more productive marine areas -- what's called the California Current Large Marine Ecosystem - has garnered much attention in recent years, also raising questions about whether it has happened before, and what is causing it.

"People keep asking us, 'Is this situation really all that different or not?'" Lubchenco said. "Now we have the answer to that question, and it's an unequivocal 'yes.' The low oxygen levels we've measured in the



last six years are abnormally low for our system. We haven't seen conditions like this in many, many decades, and now with varying intensity we've seen them in each of the last six summers."

In these events, water oxygen levels have repeatedly reached hypoxic levels, below which most marine animals suffocate or are severely stressed if they cannot escape the area. If oxygen levels drop to zero, most animals die. The massive 2006 event covered at least 3,000 square kilometers, lasted for four months, and occupied up to 80 percent of the water column in shallow shelf areas, the report said. Fish either died or fled these areas, thousands of crabs died, and marine seafloor life that could not move faced almost total mortality. Recovery has been slow.

It's less certain why this is happening, but the events are completely consistent with global climate change, the OSU researchers say.

"There have always been unusual weather events, such as hurricanes, droughts, and changes in wind patterns," said Jack Barth, an OSU professor of physical oceanography and a lead scientist with PISCO. "So it's difficult to prove that any one event is caused by global warming. Having said that, we expect global warming to generally cause stronger and more persistent winds. These winds contribute to the hypoxic events by increasing plankton production and holding low-oxygen water on the continental shelf for longer periods."

"At this point, I'd be surprised if this trend towards hypoxic events didn't continue," Barth said.

Francis Chan, a marine ecologist with OSU and PISCO, conducted a survey of all known records of oxygen levels on the Oregon continental shelf over the last 60 years, with measurements taken by research cruises and ocean-going vessels from more than 3,000 stations. "The data make it pretty clear that the recent conditions are unprecedented during any period that has been measured," Chan said. "We're now seeing very low-oxygen water, lasting for long periods, and closer to shore than at any time in more than 50 years."

That long period of time included several El Niño and La Niña events, possible suspects in any change of Pacific Ocean conditions, and also shifts in the Pacific Decadal Oscillation, another player in near-term climate trends. None of those appeared to have any correlation to the hypoxic events. Hypoxic conditions in ocean waters -- often popularly called "dead zones" -- are usually associated with serious nitrate loads or other nutrient pollution, such as in the Gulf of Mexico or Chesapeake Bay. Pollution-caused hypoxic zones are found with much less frequency in regions where significant upwelling occurs -- a process that is usually beneficial to productive marine food webs.

"Coastal upwelling ecosystems occupy only about 1 percent of the ocean surface area, but they produce about 20 percent of global fishery production," Lubchenco said. "These areas have historically been highly productive. The appearance or increase in severity of hypoxia in these ecosystems would be cause for concern." Some other areas of the world bear more similarity to the recent situation off the Pacific Northwest, such as the Benguela Current off South Africa and Humboldt Current off Chile. They historically have had hypoxic conditions before -- which may be getting worse.

"The Namibian system in the past decade seems to be seeing lower oxygen levels and more frequent hypoxic events than it had previously," Barth said. "Historically it has even more extreme upwelling than we have in the Pacific Northwest, and more frequent marine life die-offs."

A concern, researchers say, is whether that system is a harbinger of the future for the Pacific Northwest.

Adapted from materials provided by Oregon State University, via [EurekAlert!](#), a service of AAAS.

<http://www.sciencedaily.com:80/releases/2008/02/080214144547.htm>

2007 Hurricane Season Starts Early, Ends Late



NASA's Aqua satellite captured this image of Hurricane Felix approaching Central America on Sept. 3, 2007. (Credit: NASA)

ScienceDaily (Feb. 15, 2008) — The Atlantic Hurricane Season began early in 2007, and by mid-December it was still going. The season officially begins June 1 and ends Nov. 30. That means that for the most part, storms have formed and fizzled between those dates, or they used to.

NASA satellites were watching and providing data from the beginning when Andrea kicked off the season on May 9 when she formed 150 miles northeast of Daytona Beach, Florida. On Dec. 10, 2007, Sub-Tropical Storm Olga formed to the east of Hispaniola.

The hurricane season produced 2 tropical depressions and 15 tropical storms, six of which became hurricanes. That's a little more than average. The storms that became hurricanes were: Dean, Felix, Humberto, Karen, Lorenzo and Noel.

Double Trouble With Category 5 Storms

Of special note, there were two Category 5 hurricanes which led to a "first." It was the first time two Category 5's made landfall in one season. Both storms, Dean and Felix, made landfall in Central America. Hurricane Dean made landfall near Costa Maya on the Yucatan Peninsula on Aug. 21, packing sustained winds near 165 mph. Dean then moved into the Gulf of Campeche to make a second landfall near Tecolutla, with 100 mph winds as a Category 2 storm.



Twelve days after Dean's first landfall, Hurricane Felix made landfall near Punta Gorda, Nicaragua on Sept. 2 with sustained winds of 160 mph. Dean was also noteworthy for another reason, it was the first Category 5 hurricane to make an Atlantic Ocean basin landfall since 1992, when Andrew hit south Florida.

Which Ones Affected the Mainland U.S.?

The mainland U.S. was hit by five storms during the 2007 Atlantic Hurricane Season. There was one hurricane, three tropical storms and one tropical depression that affected the U.S. Hurricane Humberto made landfall along the upper Texas coast on Sept. 13. Tropical storms that hit the U.S. were Barry, Erin and Gabrielle. Barry came ashore on June 2 near Tampa Bay, Florida. A weak Tropical Storm Erin hit southeast Texas on August 16. Tropical Storm Gabrielle made landfall along the Cape Lookout, North Carolina National Seashore on Sept. 9. Tropical Depression Ten made landfall near Fort Walton Beach, Florida late on Sept. 21.

NASA's Terra satellite's MODIS instrument captured Noel strengthening into a tropical storm on Oct. 28. Click image for enlargement. Credit: NASA MODIS Rapid Response

Erin is noteworthy because of the massive flooding that it produced in Oklahoma and Texas. Erin's highest rainfall totals through August 20 occurred well inland and were between 200 to 250 millimeters, or approximately 8 to 10 inches over central Oklahoma. The central Texas Gulf Coast also received a substantial amount of rain, between 100 to 200 millimeters or between 4 to 8 inches, where Erin made landfall.

Humberto Was the Season's Fastest Grower It only took Humberto 24 hours to go from a tropical depression with sustained winds of 35 mph to a hurricane with sustained winds of 85 mph. There were only three other storms in recorded history that strengthened from a depression to a hurricane in 24 hours: Celia in 1970, and Arlene and Flora 1963. Other storms have intensified faster if one considers the net intensity change over 24 hours. For example, Wilma in 2005 went from a tropical storm to a Category 5 storm in less than 24 hours. That may be the most rapid rate of intensification ever, but starting from tropical storm stage rather than tropical depression stage.

Noel Was Deadliest

Hurricane Noel was the deadliest storm of the 2007 season, as it killed 122 people in the Dominican Republic and Haiti when it passed through there as a tropical storm in late October. News reports indicated 664 homes were destroyed and an additional 15,600 were damaged in the Dominican Republic, while Haiti reported 4,850 houses damaged, 1,075 completely destroyed, and crop losses from floods and mudslides.

Oceanographer Bill Patzert from NASA's Jet Propulsion Laboratory, Pasadena, Calif. said "In May, NOAA's Climate Prediction Center and other long-range hurricane forecasters predicted an above normal Atlantic hurricane season (13-17 named storms and 7-10 hurricanes) based on ocean and atmospheric conditions, like a building La Nina. At season's end, 15 named storms and 6 hurricanes were generated leaving many forecasters scratching their heads. The good news was that U.S. Gulf and East Coast communities were cut a break in 2007 and avoided major hurricane damage this year. The bad news, with no rainfall relief from tropical storms or hurricanes, the record-breaking Southeast drought continued and deepened."

A Deadly Season in the Western Pacific and Indian Oceans Other parts of the world weren't quite as fortunate as the U.S. this hurricane season. In the western Pacific and Indian Ocean regions, cyclones were very active.

The north Indian Ocean experienced a damaging and deadly 2007 hurricane (cyclone) season. In June, Category 5 Cyclone Gonu surged out of the Arabian Sea and struck Oman and Iran - nations that almost never experience cyclones - causing almost \$4 billion in damage. In mid-November, Cyclone Sidr was

spawned in the Bay of Bengal, grew to Category 5 intensity, and devastated Bangladesh. More than 4,000 died and tens of thousands of homes were leveled. Both of these Category 5 cyclones caused immense property damage and had crippling impacts in these emerging nations. In the northwest Pacific, twenty-four named tropical storms developed during 2007. Usually the busiest region for hurricanes (typhoons), this relatively large number of tropical storms was below the annual average of 27. Of the twenty-four named tropical storms, fourteen storms were classified as typhoons, equaling the annual average. Although an "average" season, northwest Pacific tropical typhoons affected millions in southeast Asia, with typhoons Pabuk, Krosa, Lekima and tropical storms like Peipah among the most severe. Flooding, crop loss and wide spread property damage were experienced during this "normal" northwest Pacific hurricane season.

First Cyclone of Season Forms Near Western Australia The end of December also marked the formation of the first cyclone near western Australia. Tropical cyclone Melanie developed at sea on Dec. 28, about 600 miles northwest of the coastal community of Broome, Australia. The season in that region normally runs from November to April. **NASA Satellites Provided Valuable Information in 2007** NASA satellites provided NASA and university scientists with innovative new views of hurricanes in both hemispheres and during all seasons. Using simultaneous, accurate measurements of cloud-top temperatures from the Moderate Resolution Imaging Spectroradiometer on NASA's Aqua satellite, and cloud-top height and cloud profiling information from NASA's CloudSat satellite, NASA and university scientists announced they developed a promising new technique for estimating the intensity of tropical cyclones from space.

The method could one day supplement existing techniques, assist in designing future tropical cyclone satellite observing systems, and improve disaster preparedness and recovery efforts. This new technique was developed by scientists at NASA's Jet Propulsion Laboratory, Pasadena, Calif.; Colorado State University, Fort Collins, Colo.; and the Massachusetts Institute of Technology (MIT), Cambridge, Mass. The framework used by the team to estimate tropical cyclone intensity was developed by co-author Kerry Emanuel of MIT and his colleague Valerie Wong. While several factors likely contributed to the sharp decrease in the number of hurricanes during 2007, research by William Lau, Chief of the Laboratory for Atmospheres at NASA's Goddard Space Flight Center, Greenbelt, Md. showed that Saharan dust may have a major effect on seasonal hurricane activity. Lau and his colleagues used data from the Moderate Resolution Imaging Spectroradiometer on NASA's Terra and Aqua spacecrafts to better understand the role of African dust storms in hurricane activity. Lau noted that Saharan dust through its radiative properties, spatial and temporal coverage and concentrations may play as big a role as other atmosphere-ocean conditions, like El Niño, and offer some predictive value, so they should be closely monitored to improve hurricane forecasts.

NASA's QuikSCAT provided information on surface wind direction and speed in storms and was useful for identifying when various storms first developed a surface circulation. In general, hurricane forecasters at the National Oceanic and Atmospheric Administration's (NOAA) National Hurricane Center used these data, experimentally, to improve forecasts of hurricane intensity and direction. One of their goals is to more precisely forecast hurricane landfalls and lessen the financial impacts of unnecessary evacuations. Scott Braun, Meteorologist at NASA Goddard said, "The Tropical Rainfall Measuring Mission (TRMM) satellite and NASA's Aqua satellite's Advanced Microwave Scanning Radiometer (AMSR) data provided information on precipitation structure, changes in which can often reflect changes in intensity, as well as helped to provide more accurate locations on the centers of storms such as powerful storms like Dean and Felix, as well as all other storms."

"Further, QuikSCAT winds, TRMM and AMSR precipitation, and radiances from the Atmospheric Infrared Sounder (AIRS) on NASA's Aqua satellite were used as input into NOAA's operational forecast models," Braun said. "The TRMM multi-satellite precipitation analysis was used to monitor heavy rainfalls associated with Hurricane Noel and Tropical Storm Olga in the Dominican Republic and Haiti, where these storms did a great deal of damage and killed many people."

Adapted from materials provided by National Aeronautics And Space Administration.

<http://www.sciencedaily.com:80/releases/2008/02/080212144059.htm>

Wireless Monitoring Of People And Things: Future Of Social Networking?



The Ecosystem can alert users when they have left something behind. (Credit: Image courtesy of University of Washington)

ScienceDaily (Feb. 14, 2008) — If you need information, the Internet offers a wealth of resources. But if you're hunting down a person or a thing, a computer's not much help. That may soon change. Electronic tags promise to create what some call the "Internet of things," in which objects and people are connected through a virtual network.

To see what this future world would be like, a pilot project involving dozens of volunteers in the University of Washington's computer science building provides the next step in social networking, wirelessly monitoring people and things in a closed environment. Beginning in March, volunteer students, engineers and staff will wear electronic tags on their clothing and belongings to sense their location every five seconds throughout much of the six-story building. The information will be saved to a database, published to Web pages and used in various custom tools. The project is one of the largest experiments looking at wireless tags in a social setting.

The RFID Ecosystem project aims to create a world that many technology experts predict is just on the horizon, said project leader Magda Balazinska, a UW assistant professor of computer science and engineering. The project explores the use of radio-frequency identification, or RFID, tags in a social environment. The team has installed some 200 antennas in the Paul Allen Center for Computer Science and Engineering. Early next month researchers will begin recruiting 50 volunteers from about 400 people who regularly use the building.

"Our goal is to ask what benefits can we get out of this technology and how can we protect people's privacy at the same time," Balazinska said. "We want to get a handle on the issues that would crop up if these systems become a reality."



Many businesses already use RFID tags to track products in the supply chain. Now the tool is moving to other areas. Some transit agencies use radio tags in bus and train passes. The new U.S. passports incorporate RFID tags. Technology experts predict that RFID tags will soon be incorporated in consumer devices, such as cell phones, laptops and music players.

Each tag, which looks a bit like a thin, flexible credit card, costs about 20 cents to produce. A specialized reader can scan the card through any non-metal barrier and from up to 30 feet away, depending on the type of tag. RFID tags are miniature computer chips that contain far more information than a barcode. Also, you can write to an RFID tag--meaning the signal could not only identify the item, but what group it belongs to, when it was last seen, and other information.

The technology has already proven its use in tracking goods. A manufacturer can identify a cart of hamburger patties and know which plant it came from, when it shipped out and a history of its temperature during transit. UW computer-science staff members have already requested to participate in the study so that they will be able to track their equipment as it is moved through the building.

But for people, the technology's power raises questions. An RFID card can be read from a distance and without the wearer's knowledge. The associated databases archive vast amounts of information.

"What if RFID readers were everywhere, and everything had RFID tags? What are the pluses and minuses? What do you do with all that data?" said Gaetano Borriello, a UW professor of computer science and engineering. "In computer science, we try to create a future world that doesn't exist yet. We'd like to get some experience rather than just conjecture about this."

The researchers received human subjects approval to conduct the trial. Each participant will be able to control who can see his or her data, and can delete any data or opt out of the study at any time without explanation or penalty. Researchers also note that they have not placed any RFID readers near bathrooms or eating areas, because these are considered personal spaces.

Study volunteers will be interviewed periodically. The researchers will be assessing both positive aspects, such as keeping track of everything from where you lost your laptop charger to where your friends are meeting for coffee, and negative aspects in terms of loss of privacy.

"Even if you wanted to study just privacy, or just utility, you'd have to study the other as well," said Evan Welbourne, a UW doctoral student in computer science and engineering. "People are more likely to give out information if there's a benefit to them. You can't really separate issues of privacy from issues of utility."

Research members have been testing the system on themselves. Over the past year, all 10 members of the group have worn the tags on their necks and placed them on certain belongings. Balazinska set the system so that she can't see her students, but she allows them to access her data. The students occasionally used the alerts to catch their adviser on her way out of the building. Many members of the team reported using the database to find out where they had left their belongings.

The pilot study will incorporate two new student-developed features that aim to exploit the system's potential benefits. One invention is a tool that records a person's movements in Google Calendar. Study participants can set the system to instantaneously publish activities on their Web calendar, such as arrival at work, meetings or lunch breaks.

"It's a perfect memory system that records all your personal interactions throughout the day," Welbourne said. "You can go back a day later, a month later, and see, 'What did I do that day?' or, 'Who have I spent my time with lately?'"

Another tool is a friend finder, named RFIDder (pronounced "fritter"). This sends instant alerts to participants' e-mail addresses or cell phones telling them when friends are in certain places. With RFIDder, each user can specify who is allowed to see their data. They can change the settings at any time,



and can easily turn it off whenever they don't want to be found. The system will link to Twitter, an online blog that lets people post their whereabouts online.

"We want to observe how a group of people uses these tools, whether they find them useful, how they adapt them," Balazinska said.

Researchers are also devising ways to deal with the many technical challenges involved in sorting RFID data. As data floods in, the researchers would like to make sense of it. They also want to develop a main database where people can find the information they need, but can't abuse it by looking at too much of other people's personal information. Proposals include systems that would impose a cost for looking up certain types of information, or that would let people see who is accessing their data.

A major research focus is extracting information from imperfect data. Metal can block the RFID signal and using the data to figure out people's actual position is tricky. Current systems combine artificial intelligence and database techniques to produce usable information, Balazinska said.

"This is a major project that has many facets," Balazinska said. "We worry that these technologies are being implemented too quickly, and with this system we want to explore it in a controlled environment, to inform the public and policymakers about issues we might face."

The project is funded by the National Science Foundation, Microsoft Research and the UW's College of Engineering.

Adapted from materials provided by University of Washington.

<http://www.sciencedaily.com:80/releases/2008/02/080212173134.htm>

New Fish Parasite Species Described



Abscesses in the kidney of farmed salmon caused by Spironucleus Salmonicida. (Credit: Image courtesy of Norwegian School of Veterinary Science)

ScienceDaily (Feb. 14, 2008) — While studying towards his doctorate of philosophy, Anders Jørgensen discovered a previously undescribed species of parasite that infects farmed fish and produces serious disease.

Single-celled parasites of the genus *Spironucleus* are known to produce serious illness in farmed and aquarium fish. In farmed salmon, these parasites create foul-smelling, puss-filled abscesses in muscles and internal organs. After the first outbreaks of this disease were described in farmed salmon in the late 1980's, it was assumed that the cause was *Spironucleus barkhanus*, which is a fairly common parasite in the intestine of wild grayling and Arctic char.

In these fish species, however, the parasite is benign. For his doctorate, Jørgensen completed genetic studies showing that the disease-causing parasite in farmed salmon is genetically quite different from the species one finds in wild salmonids, although they appear to be identical, even under high magnification in an electron microscope. Based on this observation, the parasite that causes disease in farmed salmon has now been described as a new species – *Spironucleus salmonicida*.

“Our work has shown that genetic methods need to be utilised for correct identification of single-celled parasites of the genus *Spironucleus*. Parasites that appear to be identical morphologically may in fact be significantly different genetically. An exact identification of organisms that produce disease is extremely important in the fight to find the cause of disease outbreaks and provides an important contribution to finding appropriate diagnostic methods”, says Anders Jørgensen.

Jørgensen carried out similar studies with other *Spironucleus* species, which he also incorporated into his doctoral thesis. *Spironucleus vortens*, which causes disease in aquarium fish, is also found in wild carp in Norway. Even though these parasites appear to be identical, they are very different genetically. Jørgensen



also addressed the cod parasite *Spironucleus torosus*, which is found in several genetic variants. Based on these new findings, Jørgensen discusses whether the genetic differences between the variants provides a basis for splitting them into separate species.

Finally, Jørgensen investigated relationships between a series of species. These investigations showed that parasites from other *Spironucleus* families form three primary groups, which reflect the different environments their host species live in. His thesis hints that each of these groups may constitute a separate genus.

Anders Jørgensen defended his thesis for the degree of Doctor Scientiarum at the Norwegian School of Veterinary Science on January 24, 2008, with the title “Genetic studies of diplomonad flagellates from fish”.

Adapted from materials provided by Norwegian School of Veterinary Science.

<http://www.sciencedaily.com:80/releases/2008/02/080211132056.htm>

Jules Verne ATV Launch Approaching



Preview of the maiden launch and docking of ESA's Jules Verne ATV. Jules Verne will be lifted into space on board an Ariane 5 launch vehicle. (Credit: ESA - D. Ducros)

ScienceDaily (Feb. 14, 2008) — After the successful launch of ESA's Columbus laboratory aboard Space Shuttle Atlantis on February 7, it is now time to focus on the next imminent milestone for ESA: the launch of Jules Verne, the first Automated Transfer Vehicle (ATV) to be sent to the International Space Station.

The 20-tonne European resupply and space-tug module will be carried into orbit by a special version of the Ariane 5 launch vehicle. The launcher, operated by Arianespace, is now scheduled to lift off from Europe's spaceport in Kourou, French Guiana, on 8 March at 01:23 local time, 05:23 CET.

From 2008 onward, ESA's Automated Transfer Vehicle will be one of the space station's supply spacecraft, delivering experiments, equipment and spare parts, as well as food, air and water for its permanent crew.

Constructed by EADS-Astrium, the ATV, which is the most powerful automatic spaceship ever built, will carry up to 9 tonnes of cargo to the station as it orbits 400 km above the Earth.

Equipped with its own propulsion and navigation systems, the ATV is a multi-functional spacecraft, combining the fully automatic capabilities of an unmanned vehicle with the safety requirements of a crewed vehicle. Its mission in space will resemble that, on the ground, of a truck (the ATV) delivering goods and services to a research establishment (the space station).



A new-generation high-precision navigation system will guide the ATV on a rendezvous trajectory towards the station. In early April, Jules Verne will automatically dock with the station's Russian Service Module, following a number of specific operations and manoeuvres (on 'Demonstration Days') to show that the vehicle is performing as planned in nominal and contingency situations.

It will remain there as a pressurised and integral part of the station for up to six months until a controlled re-entry into the Earth's atmosphere takes place, during which it will burn up and, in the process, dispose of 6.3 tonnes of waste material no longer needed on the station.

Adapted from materials provided by European Space Agency.

<http://www.sciencedaily.com:80/releases/2008/02/080211120639.htm>

Natural Purple Pigments In Fruits, Vegetables And Berries, Such As Blueberries, May Help Prevent Obesity



Here's to purple power: Colorful pigments found in the skin of blueberries, strawberries and other fruits and vegetables may help prevent obesity, according to recent animal studies. (Credit: Courtesy of USDA Agricultural Research Service)

ScienceDaily (Feb. 14, 2008) — Scientists in Arkansas are reporting new evidence that natural pigments responsible for the beautiful blue/purple/reddish color of certain fruits and vegetables may help prevent obesity. Their animal study however, reports that eating the whole fruit containing these pigments seems to be less effective than eating an extract of the berry. Ronald L. Prior and colleagues, who did the new study, note that past research has shown that the pigments -- called anthocyanins -- prevent obesity in laboratory mice fed a high-fat diet. Anthocyanins are found in grape skins, blueberries, blackberries, purple corn, and other foods. The mice also had other healthful changes in disease-related substances found in the blood.

In the new study, researchers found that mice fed a high-fat diet for 8 weeks plus drinking water with purified anthocyanins from blueberries and strawberries gained less weight and had lower body fat levels than a control group. "Anthocyanins fed as the whole blueberry did not prevent and may have actually increased obesity," the study reported. "However, feeding purified anthocyanins from blueberries or strawberries reduced obesity." The article "Whole Berries versus Berry Anthocyanins: Interactions with Dietary Fat Levels in the C57BL/6J Mouse Model of Obesity" is scheduled for the Feb. 13 issue of ACS' Journal of Agricultural and Food Chemistry.

Adapted from materials provided by American Chemical Society, via [EurekAlert!](#), a service of AAAS.

<http://www.sciencedaily.com/releases/2008/02/080211091354.htm>

Antarctic Expedition Provides New Insights Into The Role Of The Southern Ocean For Global Climate



Emperor penguin, taking a look at the research vessel Polarstern. (Credit: Sarah Herrmann, Alfred-Wegener-Institut)

ScienceDaily (Feb. 14, 2008) — In the Southern Ocean, large quantities of surface-drifting plankton algae are able to significantly reduce the carbon dioxide content of the surface waters, which can affect the global carbon dioxide cycle. This is one of the results from an Antarctic expedition which has just drawn to a close in Cape Town on February 4, and which was led by the Alfred Wegener Institute, part of the Helmholtz Association. The goal of the exploration is to understand the role of the Southern Ocean for past, present and future climate.

The Southern Ocean -- a key region for global climate events

During expeditions of the research vessel Polarstern, and within the framework of the International Polar Year 2007/08, researchers from all over the world are making pioneer contributions to the understanding of the Southern Ocean. This massive water body surrounding the Antarctic continues to be largely unexplored. However, since it has a significant effect on the climate of the entire earth, it is absolutely necessary to intensify research activities. The International Polar Year provides a unique opportunity for combining the scientific efforts of various countries in order to gain major insights.

First results from the expedition

The recently concluded Polarstern expedition had started in Cape Town on November 28, 2007 and was devoted primarily to organisms and materials cycles in the ocean. Under the leadership of Prof Dr Ulrich Bathmann of the Alfred Wegener Institute, 53 Scientists from nine countries have been studying the biological carbon pump in the Southern Ocean, among other topics. Algal plankton absorbs carbon through photosynthetic activity, hence removing carbon dioxide from the atmosphere. Researchers have



discovered that melting sea ice has created a pool of fresh water on the sea surface. Algal plankton growing in this pool started to decay and to sink to the seafloor. There, metabolic processes occurred.

The scientists investigated an algal carpet drifting in the water near the edge of the sea ice. This algal bloom measured 700,000 square kilometres, i.e. approximately twice the size of Germany. The researchers wanted to find out which physical conditions lead to such algal blooms, and how they affect the living and non-living environment. Their measurements demonstrate a significant decrease in the carbon dioxide content of the surface water.

In addition, the new data show the effect of the plankton bloom on the species community at the seafloor. For the first time ever the complete water column of the Southern Ocean -- from the surface to the seafloor -- was sampled simultaneously and comprehensively. The current inventory of the flora and fauna will also provide the basis for comparison with future investigations.

During the expedition, Polarstern also offered crucial support through her icebreaking capacity so that the construction materials for the new German Antarctic station Neumayer III could be unloaded despite severe ice conditions.

International workshop

On February 5, an international workshop on climate research in the Southern Ocean will take place aboard Polarstern in Cape Town. The scientists aboard the French and German research vessels Marion Dufresne and Polarstern will meet South African partners to exchange results and plan future collaboration. Most German Antarctic expeditions leave from Cape Town, and it is intended to strengthen and intensify cooperation with South Africa regarding both marine sciences and logistics. Federal research minister Dr Annette Schavan will attend the workshop.

The next Polarstern expedition

On February 6, Polarstern will leave for the next Antarctic expedition under the leadership of Dr Eberhard Fahrback of the Alfred Wegener Institute. The main expedition programme is motivated by the International Polar Year 2007/08. The two projects, CASO (Climate of Antarctica and the Southern Ocean) and GEOTRACES are focused on recording current physical and biogeochemical conditions in the Southern Ocean. Recording equipment aboard Polarstern, as well as ocean-deployed buoys and drift units designed to sink to deep water will be measuring ocean currents in the Southern Ocean, distribution of trace substances, transport of water bodies, and interactions between sea and ice as well as ocean and atmosphere. This expedition is scheduled to end on April 16 in Punta Arenas, Chile.

Teacher participation in the expedition

Gaining insights into the global climate system is not the only objective of the International Polar Year. Involving the public, specifically the young generation, in ongoing research and provision of extensive information are central goals. For this reason, two teachers will also be aboard Polarstern. Charlotte Lohse from Hamburg and Stefan Theisen from Kiel will be actively involved in the expedition research, allowing them not only to refresh their knowledge about current climate research, but also to communicate their insights via telephone and internet to their students. "I hope that I can personally bring home many impressions from this research voyage, so that I can provide the students with a more accurate representation of the Polar Regions. During preparations for the trip and in conversations with my students, I have experienced great enthusiasm in these young people when it comes to the subject Antarctic", says Charlotte Lohse, teacher at Heisenberg Gymnasium in Hamburg.

Adapted from materials provided by Alfred Wegener Institute for Polar and Marine Research.

<http://www.sciencedaily.com:80/releases/2008/02/080205111736.htm>



Robots could reduce animal tests

By Helen Briggs

Science reporter, BBC News, Boston



US scientists are taking the first step towards testing potentially hazardous chemicals on cells grown in a laboratory, without using live animals.

Two government agencies are looking into the merits of using high-speed automated robots to carry out tests.

The long-term goal is to reduce the cost, time and number of animals used in screening everything from pesticides to household chemicals.

The move follows calls for scientists to rely less on animal studies.

Robots would be able to carry out hundreds of thousands of chemical tests a day to identify chemicals with toxic effects.

Details were published in the journal *Science* and discussed at the annual meeting of the American Association for the Advancement of Science (AAAS) in Boston.

Faster and cheaper

Speaking in a live link-up, Dr Francis Collins, Director of the National Human Genome Research Institute at the National Institute of Health (NIH), said high throughput screening might provide a faster, cheaper method of testing environmental chemicals.

Could we, in fact, instead of looking at a whole animal as our first line of analysis, look at individual cells?

Dr Francis Collins

"Historically such toxicity has always been determined by injecting chemicals into laboratory animals, watching to see if the animals get sick, and then looking at their tissues under the microscope," he explained.

"Although that approach has given us valuable information, it is clearly quite expensive, it is time-consuming, it uses animals in large numbers and it doesn't always predict which chemicals will be harmful to humans."

Five-year programme

The research collaboration between the NIH and the Environmental Protection Agency (EPA) has the potential to revolutionise the way that toxic chemicals are identified, he said.

"Ultimately, what you are looking for is, does this compound do damage to cells?" said Dr Collins.

"So could we, in fact, instead of looking at a whole animal as our first line of analysis, look at individual cells from different organisms of different animals with different concentrations of the compound?"

The five-year research programme will use high-speed automated screening robots developed during the human genome project.

This will allow them to complete over 10,000 screens on cells and molecules in a single day compared with 10 to 100 studies a year on rodent models.

Long-term approach

Samples of chemicals will be dropped onto dishes containing human or animal cells grown in the laboratory.

These will then be studied for signs of toxicity using a variety of biochemical and genetic tests.

The ultimate goal is to develop non-animal based testing methods that are rigorous enough to be submitted for regulatory approval.

Currently, more than 2,000 compounds are being studied for toxicological effects on rodent and human cells.

However, scientists say it will be many years before non animal-based tests become routine, if they prove successful at all.

Story from BBC NEWS:

<http://news.bbc.co.uk/go/pr/fr/-/1/hi/sci/tech/7246108.stm>

Published: 2008/02/15 03:20:42 GMT

Warning over illegal skin bleach

Doctors have issued a warning over the dangers of illegal skin-lightening creams, after a woman developed a hormone disorder from using them.



The patient, aged 28, put on almost two stone (13kg) in three years, could not conceive and had severe stretch marks.

In the *Lancet*, medics from west London's Hammersmith Hospital said people were unaware they were harmful.

Dermatologists said such extreme reactions were rare, but minor skin effects were more common.

Illegal skin-lightening creams are used by some black people and, to a lesser extent, some Asian people.

They can cause harm in two ways.

The creams usually contain hydroxyquinone, a skin-bleaching chemical, as well as high doses of steroids.

The use of hydroxyquinone is banned in UK cosmetic products because it causes severe skin irritation.

And the high doses of steroids found in the illegal creams should only be available on prescription because they can cause such serious disruption to the body's hormone levels.

Signalling problems

The patient, who is black, also had thin, bruised skin and mild hair growth on her back and face as well as muscle weakness.

Doctors diagnosed her with Cushing's syndrome, which is caused by high levels of steroid hormones such as cortisol in the blood.

Someone would have to use huge quantities of these creams for them to be absorbed into the body and cause these symptoms

Olivia Stevenson, British Association of Dermatologists



It is usually caused by a problem with the adrenal glands, which make the hormones, or with the pituitary gland sending too high a signal to the adrenal glands.

But blood tests on the patient showed very low levels of cortisol and of corticotropin, the signalling hormone in the pituitary gland.

The patient initially denied taking any drugs, but later admitted she had been using skin-lightening creams for seven years, buying them from a local shop rather than a pharmacy.

The cream was found to contain a steroid called clobetasol.

The woman was using about two tubes per week - about 60 grams of the cream.

'Million-pound market'

The medical team, led by Dr Tricia Tan and Dr Tony Goldstone, said: "Patients are often reluctant to admit that they have used skin-lightening creams - especially if these are supplied illegally.

"Similarly, doctors can be unaware of the need to inquire.

"But the market is worth millions of pounds a year, in the UK alone.

"Creams can contain toxic substances, such as steroids and hydroxyquinone, and patients are typically unaware of the risks."

Dr Goldstone said people who were using the creams should not stop immediately, because their bodies would no longer be making enough hormones since it was getting them from the creams - albeit in very high doses.

"People should go to their GP who will refer them to an endocrinologist."

Dr Olivia Stevenson, a spokeswoman for the British Association of Dermatologists, said: "Most problems we see are things like stretch marks, bruising and broken veins.

"To develop Cushing's, someone would have to use huge quantities of these creams for them to be absorbed into the body and cause these symptoms."

Story from BBC NEWS:

<http://news.bbc.co.uk/go/pr/fr/-/1/hi/health/7244374.stm>

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