Infoteca's E-Journal

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Bays On US Gulf Coast Vulnerable To Flooding

Hurricane Ike in Texas showing condominiums with rising rushing waters. A combination of rising seas and dammed rivers could flood large swaths of wetlands this century in one or more bays from Alabama to Texas. (Credit: iStockphoto/Susan Long)

ScienceDaily (Oct. 14, 2008) — The most comprehensive geological review ever undertaken of the upper US Gulf Coast suggests that a combination of rising seas and dammed rivers could flood large swaths of wetlands this century in one or more bays from Alabama to Texas.

The findings, which will be presented at next week's annual meeting of the Geological Society of America in Houston, stem from bayfloor sediment samples, radiocarbon tests and seismic surveys compiled over 30 years.

"In terms of sea-level increases and river sediments flowing into the bays, we're rapidly approaching a time when bays will face conditions they last saw in the Holocene, from about 9,600 until 7,000 years ago," said lead researcher John Anderson, the W. Maurice Ewing Professor in Oceanography and professor of Earth science at Rice University. "That period was marked by dramatic and rapid flooding events in each of these bays -- events that saw some bays increase their size by as much as one-third over a period of 100 or 200 years."

Anderson is presenting the findings at next week's annual meeting of the Geological Society of America (GSA) at Houston's George R. Brown Convention Center. Anderson said the magnitude of flooding seen in bays during the Holocene -- the geological epoch that began 10,000 years ago -- would be noticeable and apparent, even on a year-to-year timescale.

"If you lived at the head of Galveston Bay, near Anahuac (Texas), you could see the bayhead move northward by as much as the length of a football field each year," Anderson said.

Anderson and colleagues, including Antonio Rodriguez of the University of North Carolina at Chappell Hill, compiled their research in a new 146-page monograph published by the GSA, "Response of Upper Gulf Coast Estuaries to Holocene Climate Change and Sea-Level Rise."

Their findings stemmed from an analysis of 30 years of data from hundreds of bayfloor sediment samples, radiocarbon tests and seismic surveys from Galveston, Matagorda and Corpus Christi bays in Texas, Mobile Bay in Alabama, Calcasieu Bay in Louisiana and Sabine Lake on the Texas-Louisiana border.

"There is no question that sea levels are rising in this region at a rate today that approaches what we saw in the Holocene," Anderson said.

He said the Holocene was also marked by alternating wet and dry periods upstream, particularly in central and western Texas. There was significantly less sediment flowing into the bays during the dry periods, and the researchers found that the most dramatic flooding events occurred when less sediment was flowing into the bays at the same time that sea levels were rising faster than four millimeters per year.

Anderson said that's a particularly troubling finding because several recent studies have confirmed that the rate of sea-level rise along the Gulf Coast has doubled in the past century to a current rate of about three millimeters per year. At the same time, the installation of dams upstream has slashed the amount of sediment flowing into every southern U.S. bay.

"Our research paints a pretty clear picture of what happened in these bays the last time they encountered the circumstances that we expect to see during the coming century," Anderson said. "Our hope is that policymakers will take note of the potential danger and take steps to help alleviate it."

For example, Anderson said it doesn't make environmental sense to keep a navigation channel open between the lower Trinity River and upper Galveston Bay because the channel diverts the sediment that is flowing into the bay, preventing it from replenishing the upper bay wetlands near Anahuac.

"Now that we're aware of the dangers, there are clearly things we can do to try and avoid them," he said.

Adapted from materials provided by Rice University.

http://www.sciencedaily.com/releases/2008/10/081002172434.htm

Lunar Prospecting Robot To Be Field Tested On Hawaii's Mauna Kea

Robot designed for lunar prospecting. (Credit: Image courtesy of Carnegie Mellon University)

ScienceDaily (Oct. 14, 2008) — The cool, rocky slopes of Mauna Kea, a dormant volcano that is Hawaii's highest mountain, will serve as a stand-in for the moon as researchers from Carnegie Mellon University's Robotics Institute, NASA and other organizations test a robot designed for lunar prospecting.

During the field experiment, Nov. 1-13, the robot called Scarab will simulate a lunar mission to extract water, hydrogen, oxygen and other compounds that could potentially be mined for use by future lunar explorers. The four-wheeled robot will trek to different sites, using a Canadian-built drill to obtain a one-meter geologic core at each site. Each core will be chemically analyzed by on-board instruments developed by NASA.

"People will not return to the moon for prolonged stays unless we can find resources there to help sustain them," said University Professor William "Red" Whittaker, director of the Robotics Institute's Field Robotics Center. "The technology being developed for Scarab will help locate whatever water or resources might exist on the moon as we seek out the raw materials for a new age of exploration."

Scarab was designed and built for NASA's Human Robot Systems program by Carnegie Mellon. It serves as a terrestrial testbed for technologies that would be used to explore craters at the moon's southern pole, where a robot would operate in perpetual darkness at temperatures of minus 385 degrees Fahrenheit. The rover features a novel rocker-arm suspension that enables it to negotiate sandy, rock-strewn inclines and to lower its 5 1/2-foot by 3-foot body to the ground for drilling operations. Scarab weighs 400 kilograms (about 880 pounds) and can operate on just 100 watts of power.

"Last year, we demonstrated Scarab's unique maneuverability and its ability to navigate autonomously," said David Wettergreen, associate research professor of robotics and project leader. "This year we reconfigured Scarab to accommodate a rock sample analysis payload developed by NASA. Now it is a complete robotic system for exploring the lunar poles and prospecting for resources."

Scarab is outfitted with a drill assembly built by the Northern Centre for Advanced Technology Inc. (Norcat) in Sudbury, Ontario. The drill takes hours to cut a one-meter core into a dense layer of weathered rock and soil, known as regolith. The core is then transferred into another Norcat device that pulverizes it, about one foot at a time.

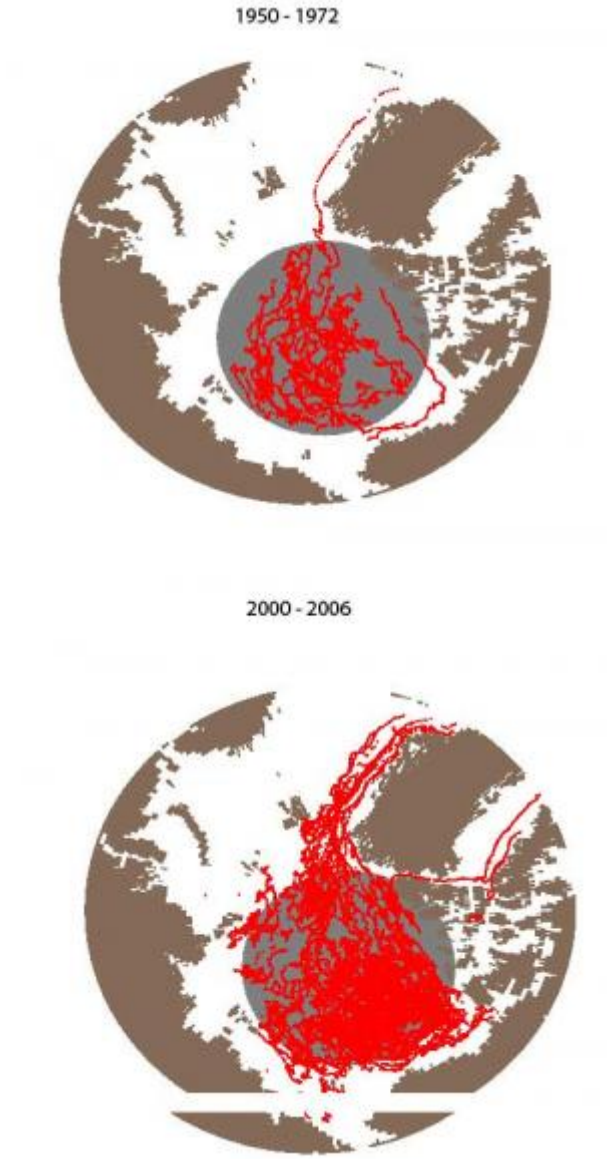
The crushed rock and soil drops into the Regolith and Environment Science and Oxygen and Lunar Volatile Extraction (RESOLVE) experiment being developed by NASA's In Situ Resource Utilization (ISRU) program. Inside RESOLVE's heating chamber, the sample is heated to 900 degrees Celsius (1652 degrees Fahrenheit); gases released by the heat are transported to a gas chromatograph, an instrument that identifies individual chemicals and their relative abundance, and to absorption beds, each of which measures a particular compound of interest. It takes up to 20 hours to analyze an entire one-meter core.

Hawaii, famed for its tropical beaches, may not seem to have much in common with the moon. But the nearly 14,000-foot summit of Mauna Kea, home to a dozen major telescopes, is often snow-capped during winter months. The NASA field test will occur at elevations of approximately 9,000 feet, where Scarab is likely to encounter rain and fog and daytime temperatures of about 40 degrees.

Adapted from materials provided by Carnegie Mellon University.

http://www.sciencedaily.com/releases/2008/10/081014134111.htm

Rising Arctic Storm Activity Sways Sea Ice, Climate



Data from Arctic buoys reporting surface air temperatures and sea level pressure were used to create sparse storm tracks from 1950 to 1972. Buoys also captured the data used to create the more abundant storm tracks from 2000 to 2006. (Credit: NASA)

ScienceDaily (Oct. 14, 2008) — A new NASA study shows that the rising frequency and intensity of arctic storms over the last half century, attributed to progressively warmer waters, directly provoked acceleration of the rate of arctic sea ice drift, long considered by scientists as a bellwether of climate change.

NASA researcher Sirpa Hakkinen of Goddard Space Flight Center in Greenbelt, Md., and colleagues from Woods Hole Oceanographic Institution, Woods Hole, Mass., and the Arctic and Antarctic Research Institute, St. Petersburg, Russia, set out to confirm a long-standing theory derived from model results that a warming climate would cause an increase in storminess.

Their observational approach enabled them to not only link climate to storminess, but to also connect increasing trends in arctic storminess and the movement of arctic ice -- the frozen ocean water that floats on the Arctic's surface. Results from their study as well as what they could mean for future climate change appeared this month in the American Geophysical Union's Geophysical Research Letters.

"Gradually warming waters have driven storm tracks -- the ocean paths in the Atlantic and Pacific along which most cyclones travel -- northward. We speculate that sea ice serves as the 'middleman' in a scenario where increased storm activity yields increased stirring winds that will speed up the Arctic's transition into a body of turbulently mixing warm and cool layers with greater potential for deep convection that will alter climate further," said Hakkinen. "What I find truly intriguing about confirming the link between the rise in storminess and increased sea ice drift is the possibility that new sinks for carbon dioxide may emerge from this relationship that could function as negative feedback for global warming."

Hakkinen and colleagues analyzed 56 years of storm track data from earlier studies and annual data on atmospheric wind stress, an established indicator of storm activity, that is generated by the National Center for Atmospheric Research in Boulder, Colo. The data confirmed an accelerating trend in storm activity in the Arctic from 1950 to 2006. Acknowledging ice as a harbinger of climate change, they next

analyzed ice drift data collected during the same 56-year period from drifting stations and after 1979 from drifting buoys positioned around the Arctic that measured surface air temperature and sea level pressure.

The team found that the pace of sea ice movement along the Arctic Ocean's Transpolar Drift Stream from Siberia to the Atlantic Ocean accelerated in both summer and winter during the 55-year period. The accelerating pace of sea ice drift coincided with an increase in wind stress. Because the surface wind is known to be the "driving force" behind the movement of sea ice, they concluded that the increase in arctic storminess and the sea ice drift speeds are linked. The finding could reinforce the critical role changes in the Arctic Ocean play in global ocean circulation and climate change.

"Ice is a very simple medium. It really is highly responsive to atmospheric forcing, a great test bed for studies like ours. Sea ice is a bellwether of climate change," said Hakkinen. "Several analyses of sea level pressures suggest increased storm activity, but some of these reports are contradictory. We used a different approach to get to the bottom of this by looking at changes in wind stress and sea ice drift rather than sea level pressure as others had done. We identified a new trend -- an increase in the magnitude of surface wind stresses over the 56-year period that tells us that storm activity and sea ice movement are connected through a cause-and-effect relationship. We didn't have solid proof until now. This relationship holds major importance for the stability of the Arctic Ocean, and the mixing of warmer and cooler layers of its water."

Progressively stronger storms over the Transpolar Drift Stream forced sea ice to drift increasingly faster in a matter of hours after the onset of storms. After analyzing past data from ground-based stations based in northern Alaska, on the mobile Fletcher's Ice Island, and in North Pole area's formerly claimed by then-Soviet Union, and others scattered across the Arctic by the International Arctic Buoy Program, Hakkinen and colleagues reported an increase over 56 years in maximum summer sea ice speeds from about 20 centimeters per second to more than 60 centimeters per second, and wintertime speeds from about 15 centimeters per second to about 50 centimeters per second.

The moving sea ice forces the ocean to move which sets off significantly more mixing of the upper layers of the ocean than would occur without the "push" from the ice. The increased mixing of the ocean layer forces a greater degree of ocean convection, and instability that offers negative feedback to climate warming. Globally, oceans absorb about 30 percent of the carbon dioxide carried by the atmosphere. According to the new findings by Hakkinen and her colleagues, the Arctic's capacity to absorb carbon dioxide could climb.

Hakkinen believes the study's approach also holds relevance for testing scientific computer models. "Twentieth century model simulations of storm activity and carbon dioxide scenario simulations from the last half century will be a test for climate change prediction models to see if they produce results in line with ours," she said.

"Although it remains to be seen how this may ultimately play out in the future, the likelihood this increasing trend and link between storminess and ice drift could expand the Arctic's role as a sink for extracting fossil fuel-generated carbon dioxide from the air is simply fascinating," said Hakkinen. "If it unfolds in the way we suppose, this scenario could, of course, affect the whole climate system and its evolution."

Adapted from materials provided by NASA/Goddard Space Flight Center.

http://www.sciencedaily.com/releases/2008/10/081006180815.htm

Soothing Music Reduces Stress, Anxiety And Depression During Pregnancy

Mother to be listening to music. (Credit: iStockphoto/Amanda Rohde)

ScienceDaily (Oct. 14, 2008) — Music therapy can reduce psychological stress among pregnant women, according to research just published in a special complementary and alternative therapy medicine issue of the UK-based Journal of Clinical Nursing.

Researchers from the College of Nursing at Kaohsiung Medical University, Taiwan, randomly assigned 116 pregnant women to a music group and 120 to a control group.

"The music group showed significant reductions in stress, anxiety and depression after just two weeks, using three established measurement scales" says Professor Chung-Hey Chen, who is now based at the National Cheng Kung University.

"In comparison, the control group showed a much smaller reduction in stress, while their anxiety and depression scores showed little or no improvement."Women in the music group also expressed preferences for the type of music they listened to, with lullabies, nature and crystal sounds proving more popular than classical music."

The women who took part in the study had an average age of 30 years, were between 18 to 34 weeks' pregnant and expected to have uncomplicated vaginal deliveries. All but five of the 241 women, who were recruited from the antenatal clinic at a medical centre in southern Taiwan, completed the pre and post-test assessments.

The demographic profiles of the two groups were very similar when it came to factors like education, occupation, social class and happiness with their marriage.

Half of the women were pregnant for the first time and just over half of the pregnancies were planned. The number of women in their second and third trimesters were more or less equal.

Four pre-recorded 30-minute music CDs were created for the study and each featured music that mimicked the human heart rate, with between 60 and 80 beats per minute.

The lullaby CD included songs like Brahms' Lullaby and Twinkle Twinkle Little Star and composers like Beethoven and Debussy were included on the classic CD. The nature sounds included Tropical Mystery

and Friendly Natives and the crystals' CD comprised Chinese children's rhymes and songs, like Little Honey-Bee and Jasmine.

Women taking part in the music group were given copies of the CDs and asked to listen to them for 30 minutes a day for two weeks. They then completed a diary saying which CD they had listened to and what they were doing at the time.

Most of them listened to the music while they were resting, at bedtime or performing chores.

The control group did not listen to the CDs.

Participants in both groups were asked to complete three well-established scales, which are used to measure stress, anxiety and depression, before and after the music intervention.

The results showed that:

- Before they took part in the study, women in the music group scored 17.44 on the Perceived Stress Scale, which ranges from zero to 30. After the intervention their stress levels had dropped by an average of 2.15, which is statistically significant. Women in the control group reported a much smaller fall of 0.92.
- Anxiety was measured by the State Scale of the State-Trait Anxiety Inventory, which ranges from 20 to 80. It fell by 2.13 from 37.92 in the music group and rose by 0.71 in the control group.
- Depression was measured by the Edinburgh Postnatal Depression scale, which ranges from zero to 30. The music group reported an average level of 12.11 before the intervention and a reduction of 1.84 at the end of the two-week period. The score was almost constant in the control group, falling by an insignificant 0.03.
- "Pregnancy is a unique and stressful period for many expectant mothers and they suffer anxiety and depression because of the long time period involved" says Professor Chen. "In fact, anxiety and depression during pregnancy is a similar health problem to postnatal depression.
- "Any intervention that reduces these problems is to be welcomed. Our study shows that listening to suitable music provides a simple, cost-effective and non-invasive way of reducing stress, anxiety and depression during pregnancy.

"The value of music therapy is slowly being realised by nurses in a number of clinical settings and we hope that our findings will encourage healthcare professionals to consider it when treating pregnant women."

Complementary and alternative therapies (CAM) are increasingly being used, according to Dr Graeme D Smith, Senior Lecturer at the University of Edinburgh and editor of the special October issue.

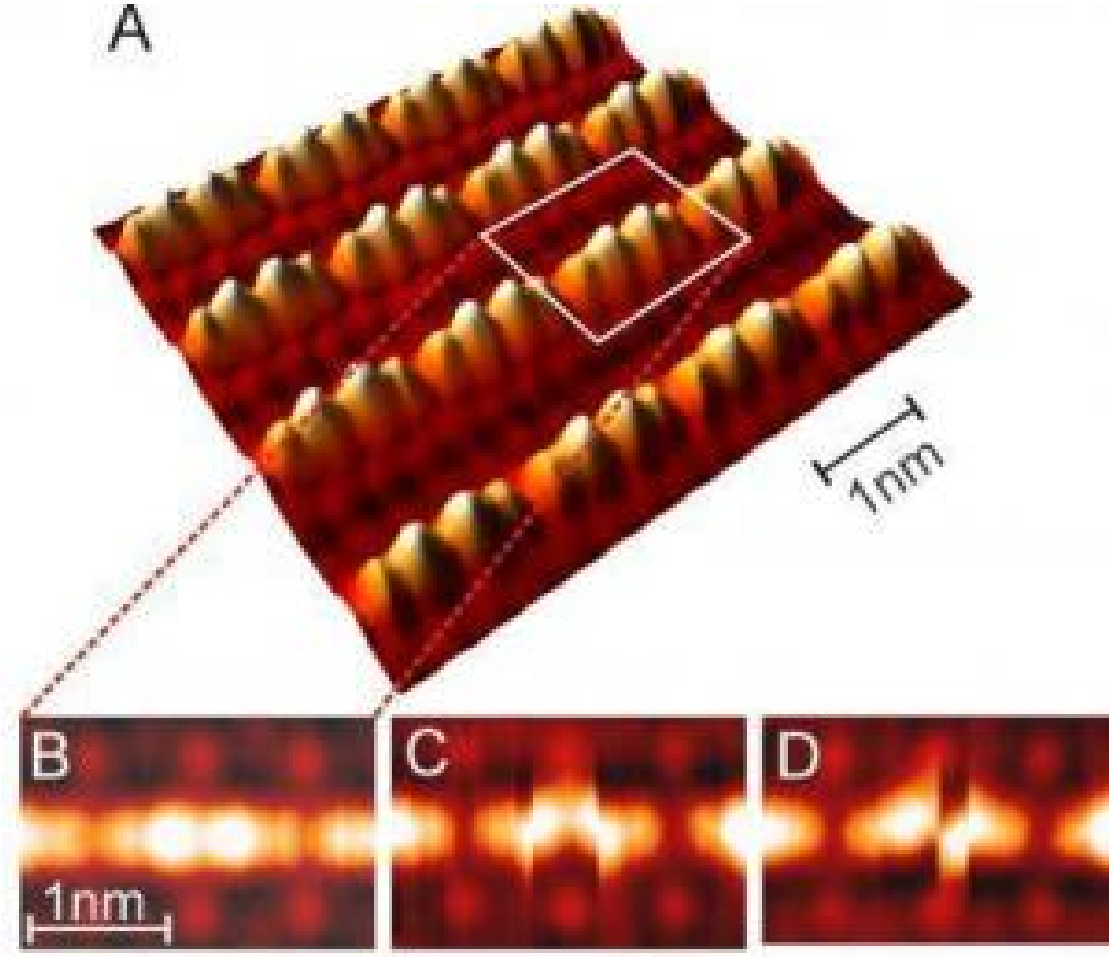
"There are many potential health benefits that can be gained from close integration of CAM therapies into nursing practice and conventional health care" he says. "In the UK, for example, approximately one in five people have tried at least one form of CAM and one in five family doctors are actively involved in providing them. It is also good to see that the National Health Service is incorporating more types of CAM as part of its delivery of integrated services.

"The beauty of the CAM technique described by Professor Chen is that patients saw immediate and significant benefits simply by including half an hours' relaxing music into their daily routine. In a world of sophisticated medical advances, it is good to see that something so easy and inexpensive can be so effective."

Adapted from materials provided by Wiley - Blackwell, via AlphaGalileo.

http://www.sciencedaily.com/releases/2008/10/081006093020.htm

Playing Pinball With Atoms: How To Turn Nanotech Devices On And Off



Scientists are reporting construction and testing of a nanotech device that responds to on-off stimuli and resembles flippers on a pinball machine. (Credit: Harold J. W. Zandvliet)

ScienceDaily (Oct. 14, 2008) — With nanotechnology yielding a burgeoning menagerie of microscopic pumps, motors, and other machines for potential use in medicine and industry, here is one good question: How will humans turn those devices on and off?

In an advance toward giving humans that control, scientists in The Netherlands are reporting use of an external electrical signal to control an atomic-scale mechanical device that looks like the flippers on a pinball machine.

Their report is scheduled for the Oct. 8 issue of ACS' monthly journal Nano Letters.

In the study, Harold J. W. Zandvliet and colleagues point out that efforts to build ever-smaller mechanical devices have made scientists recognize the difficulty of exerting control over these nanomachines, which are too tiny for any conventional on-off-switch. They describe construction and successful testing of a device, "grown" on a wafer of germanium crystal, that responds to on-off stimuli.

Researchers say the device — so tiny that billions would fit on the head of a pin — resembles the arms or flippers on a pinball machine. The signals for the arms to move back and forth come from the tip of a scanning tunneling microscope.

"By precisely controlling the tip current and distance, we make two atom pairs behave like the flippers on an atomic-sized pinball machine," they state. "Our observations prove unambiguously that it is possible to control an atomic scale mechanical device using a simple electrical signal. A better understanding of similar devices can shed light on the future possibilities and opportunities for the application of atomic-scale devices."

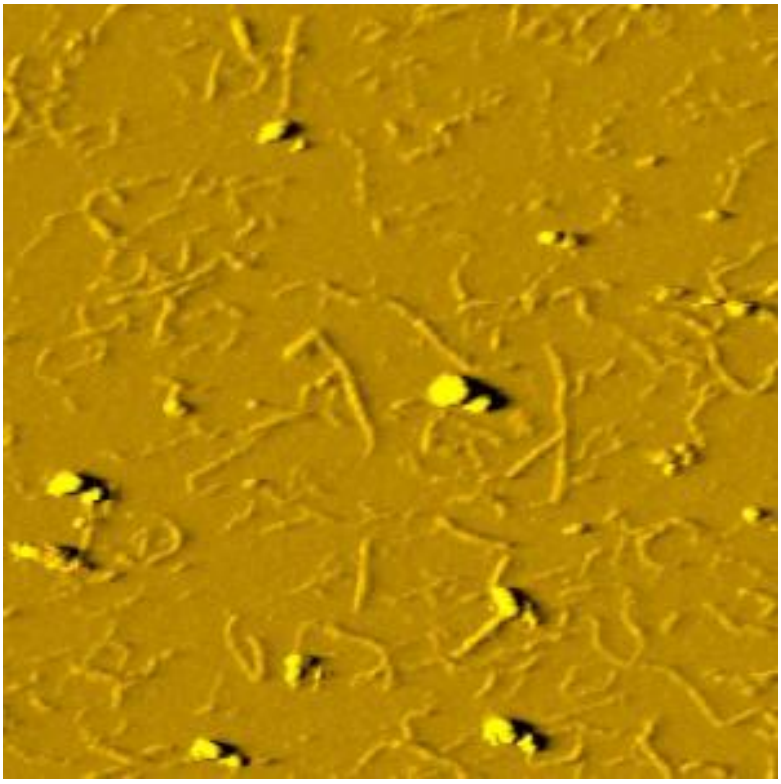
Journal reference:

1. Saedi et al. **Playing Pinball with Atoms**. *Nano Letters*, 2008; DOI: 10.1021/nl8022884

Adapted from materials provided by American Chemical Society, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2008/10/081006170627.htm

Pectin Power: Why Fruits And Vegetables May Protect Against Cancer's Spread



atomic force microscope (AFM) picture showing individual pectin molecules. (Credit: Image courtesy of Norwich BioScience InstitutesImage courtesy of Norwich BioScience Institutes)

ScienceDaily (Oct. 14, 2008) — Scientists have found a new possible explanation for why people who eat more fruit and vegetables may gain protection against the spread of cancers.

They have shown that a fragment released from pectin, found in all fruits and vegetables, binds to and is believed to inhibit galectin 3 (Gal3), a protein that plays a role in all stages of cancer progression.

"Most claims for the anticancer effects of foods are based on population studies," says Professor Vic Morris from the Institute of Food Research. "For this research we tested a molecular mechanism and showed that it is viable."

Population studies such as EPIC, the European Prospective Investigation of Cancer, identified a strong link between eating lots of fibre and a lower risk of cancers of the gastrointestinal tract. But exactly how fibre exerts a protective effect is unknown.

Pectin is better known for its jam-setting qualities and as being a component of dietary fibre. The present study supports a more exciting and subtle role.

Interaction between dietary carbohydrates and mammalian proteins, of which this research is an example, may provide an explanation. Other food carbohydrates such as beta glucans are considered to be bioactive and their anti-cancer action can be attributed to different types of carbohydrate - mammalian protein interactions.

"For a whole combination of different effects it is best to consistently eat a range of fruits, vegetables and high-fibre foods," says Professor Morris. "You don't necessarily have to eat a superfood."

The next stage of Prof Morris' research is to identify how pectin can be taken up by the body and released so it can exert its effect on cancer cells. The research could result in functional foods with added bioactive pectin as well as providing more conclusive evidence for the importance of a eating at least your '5-a-day'.

"This first step opens the way to a new and exciting area of research in bioactive carbohydrates", says Professor Morris.

The research, published in The FASEB Journal, was funded through IFR's Core Strategic Grant from the Biotechnology and Biological Sciences Research Council (BBSRC).

Journal reference:

1. Gunning et al. **Recognition of galactan components of pectin by galectin-3**. *The FASEB Journal*, October 2008; DOI: 10.1096/fj.08-106617

Adapted from materials provided by Norwich BioScience Institutes, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2008/10/081013084334.htm

Personal Music Players: Scientists Warn Of Health Risks From Exposure To Noise

Between 5 and 10% of personal music player listeners risk permanent hearing loss, if they listen to a personal music player for more than one hour per day each week at high volume settings for at least 5 years, according to a new European Union committee finding. (Credit: iStockphoto/Amanda Rohde)

ScienceDaily (Oct. 14, 2008) — Listening to personal music players at a high volume over a sustained period can lead to permanent hearing damage, according to an opinion of the EU Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR) released this week.

The scientific opinion shows that 5-10% of personal music player listeners risk permanent hearing loss, if they listen to a personal music player for more than one hour per day each week at high volume settings for at least 5 years. The European Commission had asked the independent scientific committee to examine this issue, given the widespread use of personal music players and the surge in the number of young people exposed to such noise. Scientists confirm that there is cause for concern and the European Commission will now examine with Member States and stakeholders, possible measures that could be taken to better protect children and adolescents from exposure to noise from personal music players and other similar devices.

EU Consumer Affairs Commissioner Meglena Kuneva, said, "I am concerned that so many young people, in particular, who are frequent users of personal music players and mobile phones at high acoustic levels, may be unknowingly damaging their hearing irrevocably. The scientific findings indicate a clear risk and we need to react rapidly. Most importantly we need to raise consumer awareness and put this information in the public domain. We need also to look again at the controls in place, in the light of this scientific advice, to make sure they are fully effective and keep pace with new technology."

The current rules

A European safety standard already exists restricting the noise level of personal music players to 100 dB, but there is increased concern over hearing damage from excessive exposure to such sources. Such damage can be prevented to a large extent by measures such as reducing the noise exposure levels and duration. The EU Scientific Committee opinion highlights that users of personal music players - if they listen for only 5 hours per week at high volume control settings (exceeding 89 decibels) would exceed the current limits in place for noise allowed in the workplace. Users listening for longer periods risk permanent hearing loss after 5 years. This approximates to 5-10% of the listeners, which may be between 2.5 and 10 million people in the EU.

What will the Commission do now?

The European Commission asked for the scientific study, because of increasing concerns over threats to hearing, particularly for adolescents and children from leisure activities such as the use of personal music players. Based on this scientific evidence, the Commission is organising a conference in early 2009 in Brussels to evaluate the findings of the Scientific Committee with Member States, industry, consumers and other stakeholders and to discuss the way forward. The seminar will address precautions that users can take, as well as technical solutions to minimise hearing damage and the need for further regulations or revisions of existing safety standards to protect consumers.

What consumers can do?

Personal music player users can already take certain very practical precautions, such as checking their device to see if a maximum volume can be set so as to keep the volume lower, or they can lower the volume manually, and they can take care not to use the personal music player for prolonged periods in the interest of their hearing.

Background

It is well recognised that long-term exposure to excessive sound can harm hearing. To protect workers, limits have been set for the levels of noise allowed in the workplace. Environmental sounds to which the general public is exposed - such as noise from traffic, construction, aircrafts or from the neighbourhood - can be very irritating but are in most cases not loud enough to harm hearing.

In the last few years, leisure noise has become a significant threat to hearing because it can reach very high volumes and because an increasing proportion of the population is exposed to it, particularly young people. There has been increasing concern about exposure from the new generation of personal music players which can reproduce sounds at very high volumes without loss of quality. Risk for hearing damage depends on sound level and exposure time.

In recent years sales of personal music players have soared, in particular those of MP3 players. Overall, in the EU, it is estimated that roughly 50 to 100 million people may be listening to portable music players on a daily basis. In the last four years, estimated units sales range between 184-246 million for all portable audio devices and range between 124-165 million for MP3 players. Across the EU, many millions of people use personal music players daily and, if they use them inappropriately, they put themselves at risk of hearing damage.

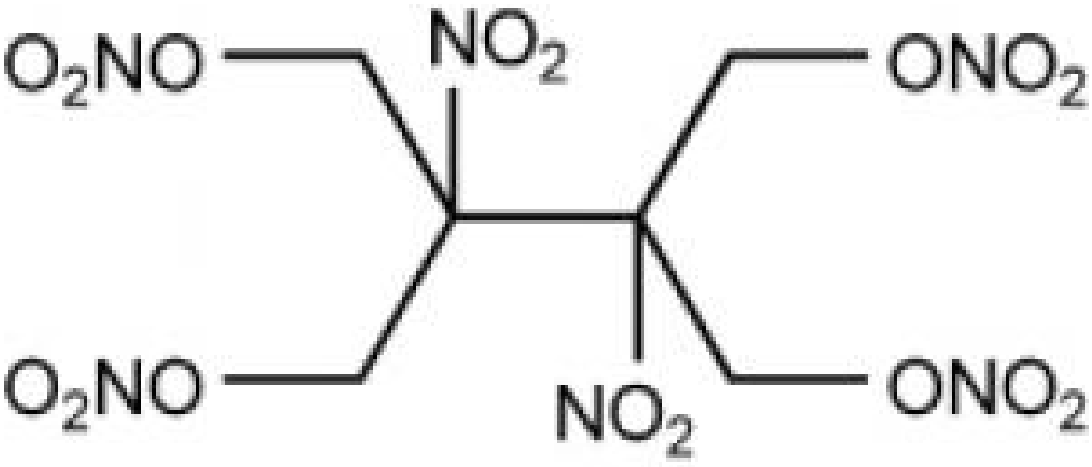
The text of the opinion can be found here.

The layman's version of the opinion can be found here.

Adapted from materials provided by European Union.

http://www.sciencedaily.com/releases/2008/10/081014093323.htm

High Powered New Explosive Developed



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The new compound contains four nitrate ester groups (–ONO2) and two nitrate groups (–NO2) bound to a total of six carbon atoms. (Credit: © Wiley-VCH)

ScienceDaily (Oct. 14, 2008) — Since the discovery of nitroglycerin in 1846, the nitrate ester group of compounds has been known for its explosive properties. A whole series of other nitrate esters have been subsequently put to use as explosives and fuels.

A research team led by David E. Chavez at Los Alamos National Laboratory (USA) has now developed a novel tetranitrate ester. The compound has a particularly interesting characteristic profile: it is solid at room temperature, is a highly powerful explosive, and can be melt-cast into the desired shape.

Nitrate esters are organic nitric acid compounds that can contain enormous explosive force. However, their liquid physical state makes handling very difficult. By mixing in various other components, Alfred Nobel developed dynamite, a distinctly safer and easier to handle nitroglycerine-based explosive. The only solid nitrate ester used as an explosive before is nitropenta. Because of its high melting point of about 140 °C, nitropenta must be pressed into the desired form.

Chavez and his co-workers have now made another nitrate ester to give nitropenta a run for its money. Thanks to its low melting point of only about 85 °C, which is well below its decomposition point (141 °C), it can be melted and poured into molds, a much easier process for the production of explosive components.

The new compound contains four nitrate ester groups ($–ONO_2$) and two nitrate groups ($–NO_2$) bound to a total of six carbon atoms. Its crystals demonstrate the highest density found for a nitrate ester so far. Computer calculations predict that the new tetranitrate ester should have an explosive power as high as that of octogen (HMX) — currently one of the highest-performance explosives. The sensitivity of the new compound toward shocks, friction, and sparks is equivalent to that of nitropenta.

“Because of its amazing properties, the new nitrate ester opens up a unique opportunity to produce castable explosive components,” says Chavez. “In addition, it could also be used as a highly energetic softener for other explosives, and as an oxidizer component.”

The researchers also plan to use their new synthetic route for the development of other explosive materials.

Journal reference:

1. . **Synthesis of an Energetic Nitrate Ester**. *Angewandte Chemie International Edition 2008*, 47, 8306%u20138308 DOI: 10.1002/anie.200803648

Adapted from materials provided by Wiley-Blackwell.

http://www.sciencedaily.com/releases/2008/10/081010102718.htm

New Gene Found That Helps Plants Beat The Heat

Arabidopsis thaliana plants. Plant scientists have discovered another piece of the genetic puzzle that controls how plants respond to high temperatures. That may allow plant breeders to create new varieties of crops that flourish in warmer, drier climates. (Credit: iStockphoto)

ScienceDaily (Oct. 14, 2008) — Michigan State University plant scientists have discovered another piece of the genetic puzzle that controls how plants respond to high temperatures. That may allow plant breeders to create new varieties of crops that flourish in warmer, drier climates.

The MSU researchers found that the gene bZIP28 helps regulate heat stress response in Arabidopsis thaliana, a member of the mustard family used as a model plant for genetic studies. This is the first time bZIP28 has been shown to play a role heat tolerance. The research is published in the Oct. 6 issue of the Proceedings of the National Academy of Sciences.

"We also found that bZIP28 was responding to signals from the endoplasmic reticulum, which is the first time the ER has been shown to be involved with the response to heat," said Robert Larkin, MSU assistant professor of biochemistry and molecular biology and corresponding author of the paper. "We're finding that heat tolerance is a more complex process than was first thought."

Previous research has shown that the nucleus, the "brain" of the cell, and cytosol, the fluid inside cells, play a role in how plants respond to heat. The endoplasmic reticulum, a membrane in the cell that consists of small tubes and sac-like structures, is mainly responsible for packaging and storing proteins in the cell.

According to Christoph Benning, MSU professor of biochemistry and molecular biology and a member of the research team, the scientists were looking for genes that turn other genes on and off and are tied to cell membranes. These membrane-tethered gene switches are seen in animals but hadn't been studied in great detail in plants.

"The bZIP28 protein is anchored in the endoplasmic reticulum, away from its place of action," Benning explained. "But when the plant is stressed by heat, one end of bZIP28 is cut off and moves into the nucleus of the cell where it can turn on other genes to control the heat response. Understanding how the whole mechanism works will be the subject of more research."

Plants with an inactive bZIP28 gene die as soon as temperatures reach a certain level.

Other scientists on the research team are Federica Brandizzi, MSU associate professor of plant biology and member of the Plant Research Lab, and Hangbo Gao, former MSU post-doctoral research associate.

The work was sponsored by the MSU-DOE Plant Research Lab. Benning's research also is supported by the Michigan Agricultural Experiment Station.

Adapted from materials provided by Michigan State University, via EurekAlert!, a service of AAAS.

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Worrisome Infection Eludes a Leading Children's Vaccine

By LAURA BEIL

A highly drug-resistant germ has become a common cause of meningitis, pneumonia and other life-threatening conditions in young children. The culprit — a strain of strep bacteria — can conquer almost all antibiotics in pediatrics, and has dodged a vaccine otherwise credited with causing the number of serious infections in children to plummet.

Since 2000, American toddlers have been immunized against Streptococcus pneumoniae, or pneumococcus, an organism that preys largely on children younger than 5 and the elderly. Pneumococcal meningitis can be fatal, and survivors are often left with deafness and other lifelong neurological problems.

And by most measures, the vaccine has worked: by 2002, rates of infection from these bacteria had dropped as much as 80 percent in some places. But progress has now stalled, and infection with a particular type of pneumococcus, Serotype 19A, is steadily rising."It's very much a concern," said Bernard Beall, a pneumococcal expert at the federal Centers for Disease Control and Prevention. Last year, in The Journal of the American Medical Association, pediatricians described an outbreak of Serotype 19A ear infections in Rochester that could be cured only by surgically implanting tubes, or by turning to adult medicines not yet tested for safety in children.

A greater worry, however, is the frequency of meningitis, pneumonia and bloodstream infections from Serotype 19A. Since 2001, rates of these and other invasive pneumococcal diseases have crept upward, to more than 10 per 100,000 children from about 2 per 100,000. A fourfold increase in life-threatening infections has also occurred among the elderly.

The vaccine, Prevnar, is aimed at seven types of bacteria that were responsible for 70 to 80 percent of pneumococcal illness during the 1990s. Because pneumococci come in 91 forms, experts have worried from the start whether bacteria that were just as deadly, but not wiped out by the vaccine, might move in as opportunists when the competition suddenly vanished.

"Nature abhors a vacuum," said Dr. Steven Black of Cincinnati Children's Hospital. Indeed, almost all pneumococcal infections among American children today are caused by versions not covered by the vaccine, and 19A is leading the way. "People hoped against hope it wouldn't happen," he said.

The vaccine's manufacturer, Wyeth, says it has been working quickly to develop a new product to counter 19A and five other pneumococcal variations, along with the original seven. The company will release results of the first large studies of the newer version this month at an infectious disease meeting in Washington.

"There was no point where we said to ourselves, 'We missed it, we need to put in 19A,' " said Emilio A. Emini, head of vaccine research and development for Wyeth. The company was always prepared to remake the product, he said.

Once a new vaccine demonstrates that it can protect against pneumococcus, it must work its way through the approval process — passing tests of effectiveness and safety — before it can be licensed. Researchers will also try to determine whether young children who have been immunized with the old Prevnar should be revaccinated to protect themselves from 19A.

The remodeling of a vaccine so soon after its approval is highly unusual, but so was the effort to tackle pneumococcus.

The bacteria live in the nose and throat, usually as microbial freeloaders of no consequence. Occasionally — often after a simple viral infection — pneumococci slip into inner areas of the body and cause disease. Weaker immune systems in the very young and the very old leave them most vulnerable. (The pneumonia shot in older people includes 19A, but many elderly people have not received the immunization.)

Not all of the 91 incarnations of pneumococcal bacteria are dangerous. They developed so much variety by mingling in the back of the throat, exchanging genetic material as eagerly as children trading Halloween candy. The variation in genes slightly alters how the bacteria function and how they are received by the immune system.

For vaccine manufacturers, pneumococci's diversity presented a challenge: how to teach the immune system to recognize a target that may look a little different from child to child. "This is the most complex biological product ever made," Dr. Emini said.Serotype 19A was around in the 1990s, though uncommon, and the vaccine includes a similar version called 19F. The hope in 2000 was that 19F looked enough like 19A to set off an immune reaction. It did not.

Experts say it is hard to know what role the introduction of Prevnar may have played in the rise of the bacteria, which was gaining momentum in some countries before the vaccine's adoption. For example, researchers from GlaxoSmithKline, which is introducing its own pneumococcal vaccine, reported last month that Serotype 19A became more common in Belgium from 2001 to 2004 — years when pneumococcal vaccination was rare in that country. Similar reports have emerged from China, South Korea and Israel.

Pneumococci ebb and flow in natural cycles, and some types have gained a survival advantage by growing resistant to a host of drugs. The vaccine may have simply amplified natural trends..

"I don't think anyone can tell you the relative contributions of these factors," said Dr. Sheldon L. Kaplan of Texas Children's Hospital in Houston. This summer, he and his colleagues described a growing number of cases of drug-resistant mastoiditis, an infection of an inner-ear bone, from 19A.

Experts are now watching to see how forcefully the organism will spread before the new immunization arrives. Wyeth says it hopes to file an application with the Food and Drug Administration in 2009.

Disease experts also wonder what organisms like 19A mean for the future of pneumococcal infections. Public health experts once hoped the infection could be defeated, but it now appears that pneumococci may be playing a game of cat and mouse.

"The pneumococcus has shown an extraordinary ability to evolve to our strategies," said Dr. Beall of the C.D.C.

Yet he and others are quick to say that immunization remains highly effective, even if it leaves some children behind. "This is not a failure of the vaccine," said Dr. George H. McCracken Jr. of the University of Texas Southwestern Medical Center at Dallas. Even with the rise of 19A, children are much less likely to become ill from pneumococcal infections.

Dr. McCracken hopes that researchers will one day avoid threats like 19A entirely by developing a vaccine that primes the immune system to recognize some element common to all 91 types of pneumococci — in the way a quiche, an omelet and a custard pie are all versions of eggs. But until such an immunization comes along, he said, pediatricians will be forced to battle the pneumococcus as they always have, by trying to stay one strain ahead of its game.

http://www.nytimes.com/2008/10/14/health/14vacc.html?_r=1&nl=8hlth&emc=hltha1&oref=slogin

The Scan That Didn't Scan

By GINA KOLATA

This is a story about M.R.I.'s, those amazing scans that can show tissue injury and bone damage, inflammation and fluid accumulation. Except when they can't and you think they can.

I found out about magnetic resonance imaging tests when I injured my forefoot running. All of a sudden, halfway through a run, my foot hurt so much that I had to stop.

But an M.R.I. at a local radiology center found nothing wrong.

That, of course, was what I wanted to hear. So I spent five days waiting for it to feel better, taking the anti-inflammatory drugs ibuprofen and naproxen, using an elliptical cross-trainer, and riding my road bike with its clipless pedals that attach themselves to my bicycling shoes. By then, my foot hurt so much I had to walk on my heel. I was beginning to doubt that scan: it was hard to believe nothing was wrong. So I went to the Hospital for Special Surgery in New York for a second opinion from Dr. John G. Kennedy, an orthopedist who specializes in sports-related lower-limb injuries. And there I had another M.R.I.

It showed a serious stress fracture, a hairline crack in a metatarsal bone in my forefoot. It was so serious, in fact, that Dr. Kennedy warned that I risked surgery if I continued activities like cycling and the elliptical cross-trainer, which make such injuries worse. And I had to stop taking anti-inflammatory drugs, since they impede bone healing.

As I hobbled around the office on crutches, one of my colleagues, James Glanz, asked what had happened. As we chatted, it turned out that he had had a much more sobering experience than mine.

Jim, the Baghdad bureau chief for The New York Times, was playing touch football in New York in late 2005 when he landed hard while diving to make a catch, both elbows hitting the ground at once. The next day, his fingers and hands hurt so much he couldn't type.

But an M.R.I. showed nothing except some bulging disks in his neck that, he was told, were common in people his age, 50. He was advised to do neck exercises, and eventually he felt better.

About a year later, he fell again while playing football. His symptoms came roaring back.

The worst was when he woke up in the morning, Jim said. The two middle fingers on each hand were so stiff they would not even bend. He would massage his fingers and loosen them, but his hands and knuckles ached all day. He tried ibuprofen, to little avail.

Finally, last spring, he sought help at New York University, where he had another M.R.I. It turned out he had a nerve impingement so serious that he was warned that he risked permanent paralysis if he did not have surgery. So this summer, he had a major operation called a French-door laminoplasty, in which his surgeon, Dr. Ronald Moskovich at the N.Y.U. Hospital for Joint Diseases, opened and widened four or five vertebrae to free the trapped nerves.

How could M.R.I.'s have come to such different conclusions for both Jim and me?

Jim asked his doctors whether he could have really had nothing wrong at the time of his first scan. Unlikely, they replied, although they cautioned that no one had directly compared the two scans.

I asked Dr. Kennedy the same question and received the same answer. He explained that in my case the quality of the two images was vastly different. "It's like the difference between a black-and-white TV and HDTV," he said.

All well and good, but how was I supposed to know? The radiology center I first went to is accredited by the American College of Radiology, and there is no way I can tell a good M.R.I. image from a bad one. In fact, I never even saw the images. All I saw were the radiologists' reports.

Academic radiologists say that, unfortunately, they see patients like Jim and me all the time.

"That's the bane of our existence in an academic medical center," said Dr. Howard P. Forman, a professor of diagnostic radiology at Yale University School of Medicine.

And it's not just patients who have to deal with the problem, said Dr. William C. Black, a professor of radiology and community and family medicine at Dartmouth Medical School. Doctors do, too. Radiology centers send written reports to doctors, but the doctors may have no idea whether the M.R.I. was done well and interpreted well. "It's a huge problem," Dr. Black said.

Unlike C.T. scans or X-rays, which transmit radiation through the body to produce images, M.R.I.'s use powerful magnets and radio waves to manipulate protons in the body's hydrogen atoms. The idea, said Dr. Andrew H. Haims, a diagnostic radiologist at Yale, is that protons in different types of tissue respond in distinctive ways to this pushing and prodding. The differing responses reveal the characteristics of the tissue.

Magnetic resonance machines, though, vary enormously, and not just in the strength of their magnets. Even more important, radiologists say, is the quality of the imaging coils they put around the body part being scanned and the computer programs they use to control the imaging and to analyze the images. And there is a huge variability in skill among the technicians doing the scans.

Dr. Forman said that at the very least, patients should go to radiology centers accredited by the American College of Radiology. But he added that accreditation does not tell you whether your scan will be done with a machine that is several generations removed from the best available today; whether the scanning is programmed to pick up your particular problem; or whether the receiving coil that picks up signals from the magnet is sufficiently sensitive.

G. Scott Gazelle, a professor of radiology at Harvard Medical School, shared Dr. Forman's opinions.

"People don't understand that there are these differences," he said, adding that radiology centers that do not keep up will be doing a less than ideal job. "The pace of technology development is staggering," he said.

Then there is the question of how skilled is the radiologist who reads your scans.

At Massachusetts General Hospital, for example, Dr. Gazelle said, "musculoskeletal M.R.I.'s are read by someone who does musculoskeletal imaging every day" — and not "by someone who reads chest M.R.I.'s one day and musculoskeletal M.R.I.'s the next."

Dr. Forman says it pays to check the credentials of a center's radiologists.

"If you say, 'Who will be reading my scan?' and they say, 'One of our radiologists,' you don't go to a place like that," he said. (I checked the Web site of the first center I went to. The radiologist who read my scan was a generalist with no special training.)

Of course, it may not be feasible to go to an academic medical center where subspecialists will read your images. And even if you do, said Dr. James Thrall, chairman of the board of chancellors of the American College of Radiology, "scans, as good as they are, are not perfect."

"I wouldn't equate a negative scan as being an 100 percent indicator that nothing is wrong," he added. So if you are told nothing is wrong because a scan was negative and you are having alarming symptoms, you may want to seek a second opinion.

And don't forget, said Dr. Jeffrey Jarvik, a professor of radiology and neurological surgery at the University of Washington, the point of an M.R.I., or any imaging study, is to help make a diagnosis that will improve your health. Often imaging is unnecessary: a good exam will reveal what's wrong, and the treatment will be the same with or without the scan.

Just as big a problem as the erratic quality of scans is the tendency of doctors and patients to rely on them too much.

"There's been a shift in medicine toward relying on imaging instead of a history and examination," Dr. Jarvik said.

And I suspect that that was one reason Jim and I were so misled.

"Pain is a way for Mother Nature to talk to us," Dr. Thrall told me. "And when our invented process for understanding is at odds with what Mother Nature is telling us, we had better listen to Mother Nature."

http://www.nytimes.com/2008/10/14/health/14scan.html?nl=8hlth&emc=hltha1

Out in the Cold

Reviewed by ALAN FURST

A MOST WANTED MAN

By John le Carré

323 pp. Scribner. $28

The great moment in the winding down of the cold war came in 1989, the reality of its ending right there on television, live from Berlin: that wall, that brutal symbol of brutal politics, being smashed to pieces by ecstatic Berliners, with pickaxes, with sledge hammers, with bare hands if that was all they had. The Iron Curtain was a metaphor, but the wall was real concrete, and there it went, and thank heaven. This was bad news only for a legion of

Communist bureaucrats — though not quite all of them, it turned out — and also, in a very small corner of the world, the toilers in fiction. Well, too bad, but if that was the price to be paid for the joyous parade of stuttering Trabbies streami into the West, so be it.

Cold war spy fiction had had its day, and it had been, for a generation of readers on airplanes and beaches, a very good day indeed. Len Deighton, Derek Marlowe, Charles McCarry and, at the top of the heap, the magnificent John le Carré, most notably in his Karla trilogy: “Tinker, Tailor, Soldier, Spy,” “The Honourable Schoolboy” and “Smiley’s People.” The great character of the trilogy was the meek, brilliant George Smiley, a character le Carré had used before but here was his full flowering. And if his reality on the page was compelling, his rendering in human form — by Alec Guinness in the BBC’s two

miniseries, adapted from “Tinker, Tailor” and “Smiley’s People” — made him even more real. You reread the books, and visualized Sir Alec. Perfect.

Le Carré went forward, right through “The Russia House,” in 1989, where a good-hearted civilian, the publisher Barley Blair, is caught up in the battles of amoral spies in a never-ending war. The motto on the family crest of that novel was “A plague on both your houses,” because, by now, le Carré was angry at the whole spy business, a big, bureaucratic sausage machine that ground up innocent civilians to no good purpose.

What had always driven le Carré’s novels was anger, moral anger, stirred by the political reality of the moment, then written from a particularly seductive point of view. If the spy wars of the later 20th century were fought in “a wilderness of mirrors,” beset by paradox and moral uncertainty — evil done in the name of good — then John le Carré, or, rather, the narrative voice that went by the name John le Carré, was the perfect choice to polish those mirrors. It was the voice of the urbane, upper-class Englishman: courteous, opaque and chilly, with a ruthless, penetrative intellect and razor wit for the delivery of its insights.

And could he write! Past tense, present tense, talks to his characters, funny one minute, wildly emotional the next, leaping from plot point to plot point and leaving out all the dumb stuff the reader knew anyhow. Under his hand, the genre had grown, had reached heights it had never known before. But, by 1990, gone. “The Secret Pilgrim” was a retrospective novel, looking back at the cold war. Then, by 1993, le Carré wrote “The Night Manager,” aimed at arms dealing, a kind of replacement villainy. There followed a few strange, uncomfortable novels — “The Constant Gardener,” “Absolute Friends,” “The Mission Song” — the passionate anger now turned on faceless corporations and their victims. No more evil in the name of good, now just obscene greed; and the chemistry didn’t work. “Actually,” people said, “I haven’t read it.”

But then, something changed. And, coincidentally, a few weeks after the cold war sat up in its coffin and smiled, John le Carré publishes one of the best novels he’s ever written. Maybe the best, it’s possible. What the hell got into him? Well, not quite 9/11, more its aftermath.

“A Most Wanted Man” is the story of a young fugitive, half Chechen, half Russian, who shows up in the German port city of Hamburg, in its way also damaged by the 9/11 attack, which was organized there, undiscovered by the German security services. His name is Issa, he is half crazy, half sane, maybe Muslim, maybe not, maybe on a terrorist mission, maybe not. What we do get to know about him is that he has been jailed by the Russians and the Turks, and has escaped detention in both those countries and in Sweden, and that he has been tortured, and pretty much psychologically destroyed by it. What he has is money: $500 in a bag around his neck, and millions in a secret account in a private British — Scottish — bank in Hamburg. Dark money, paid to his Russian colonel father by the British secret service, money now laundered, over many years, by the bank.

So, a private British bank means a private British banker. In this case, Tommy Brue, 60, “salt of the earth, good man on a dark night, no highflier but all the better for it, first-rate wife, marvelous value at the dinner table and plays a decent game of golf.” It was Brue’s father who created, and titled, certain Lipizzaner accounts — the Lipizzaner horse being born black and turning white with age, just like Tommy Brue’s clients’ crooked money.

And there is also, as there must be, a female lead, a young lawyer of solid Berlin family, whose organization, Sanctuary North, attempts to help illegal, particularly Islamic, immigrants. For many, to be returned to their country of origin means interrogation, and prison, and it is Annabel Richter’s job to save them. Could they be terrorists? All? Some? Reading “A Most Wanted Man” will let you know just what difficulties lie ahead for those who attempt to make that determination.

The major spy character, the good spy to go with the good banker and the good lawyer — nearly an unbeatable team, you think? — is Günther Bachmann. Not Smiley: much rougher, more desperate, not a bit worried about doing evil in defense of good because now it's 9/11 evil, not Soviet evil.

"If there are people in the world for whom espionage was always the only possible calling, Bachmann was such a person. The polyglot offspring of mixed marriages contracted by a flamboyant German-Ukrainian woman, and reputedly the only officer of his service not to possess an academic qualification beyond summary expulsion from his secondary school, Bachmann had by age 30 run away to sea, trekked the Hindu Kush, been imprisoned in Colombia and written a thousand-page unpublishable novel. Yet somehow, in the course of notching up these improbable experiences, he had discovered both his nationhood and his true calling: first as the occasional agent of some far-flung German outpost, then as a covert overseas official without diplomatic rank; in Warsaw for his Polish; in Aden, Beirut, Baghdad and Mogadishu for his Arabic; and in Berlin for his sins."

Now Bachmann is stationed in Hamburg. And there his team, the Foreign Acquisitions Unit, discovers Issa.

Bachmann is not the only spy in "A Most Wanted Man"; he swims in a sea of them — German espiocrats and national police; some adroitly verbal Brits, savage but polite; and, at the margin, some Americans, savage and not polite. And, taken together, quite a crew. Do they respect law and lawyers? No, they eat law and lawyers, just for an appetizer. Compared with them, the fine old le Carré characters — Connie Sachs with her total recall for Soviet thugs, Toby Esterhase and his street-surveillance Lamplighters — seem wistful, melancholy figures from a different time. In history, in fiction. And they are. Because in "A Most Wanted Man," the sheer desperation of those whose job it is to prevent another 9/11, another Madrid commuter train, another London Tube attack, is written as a slow-burning fire in every line, and that's what makes it nearly impossible to mark the page and go to sleep.

Something said earlier in this review might better be amended. The concept of "best book" is difficult for the writer and reader; there are too many variables. Truer to say that this is le Carré's strongest, most powerful novel, which has a great deal to do with its near perfect narrative pace and the pleasure of its prose, but even more to do with the emotions of its audience, what the reader brings to the book. There the television has once again done its work, has created a reality, and John le Carré has written an extraordinary novel of that reality.

Alan Furst's most recent novel is "The Spies of Warsaw."

http://www.nytimes.com/2008/10/12/books/review/Furst-t.html?8bu&emc=bua1

My Parrot, My Self

By ANTHONY GOTTLIEB

According to Pliny's "Natural History," a raven who hailed the emperor Tiberius every morning became such a local hero that he was granted a funeral procession through the streets of Rome. In September 2007, an African gray parrot named Alex went out in even grander style. Obituaries and articles about the bird appeared in publications around the world, including The New York Times. But even before Alex was found dead in his cage at Brandeis University in Massachusetts, he had made his literary mark with a walk-on part in a novel, "Oryx and Crake," by Margaret Atwood. Alex thereby joined the venerable, bizarre and surprisingly large club of talking parrots in literature.

The antics of parrots have long been deemed newsworthy, especially in Britain, where the BBC has covered dozens of supposedly true stories about them in the past decade. Almost every such report has been prefigured in a folk tale, novel or poem — even the life and achievements of Alex. "With ladies I learne, and go with them to scole": thus declaims a parrot in one of the oddest poems in English, "Speke Parrot," which was written in the early 1520s by Henry VIII's poet laureate, John Skelton. Alex would have sympathized. He spent three decades being taught by Irene M. Pepperberg and her research assistants, as Pepperberg recounts in her memoir, "Alex and Me," which will be published later this month.

In 2006, newspapers reveled in the tale of Ziggy, an 8-year-old parrot in Britain who exposed the secret affair that his owner's girlfriend was conducting with a man called Gary. Ziggy made kissing sounds when the name Gary was spoken on TV and said, "Hiya, Gary," when the girlfriend's cellphone rang. She broke down and confessed after Ziggy said, "I love you, Gary," in an imitation of her voice. The revelation of female infidelity is in fact an ancient staple of parrot literature. In a 13th-century Spanish folk tale, which derives from an earlier Arabic one, a suspicious husband buys a parrot in order to keep an eye on his wife while he is away. Upon returning from his travels, he questions the bird, who reports that the wife was indeed visited by a lover. But she triumphs by tricking the husband into believing that the parrot is a liar, and he has it killed.

In a medieval French version of the tale, there are three parrot-spies, only one of which survives, by prudently assuring the wife that he has the wisdom to know when to remain silent. A modern variation on this theme — in a story by Robert Olen Butler, published in The New Yorker in 1995 — has a husband climb a tree to observe his wife in an act of infidelity. He falls to his death and is reincarnated as a parrot, which the wife then purchases from a pet store.

Both in literature and in life, parrots have been employed to bear false witness. In his memoirs, Casanova recounts how he bought one in London's Smithfield market and trained it to say, "Miss Charpillon is more of a whore than her mother," in order to exact his revenge on a pair of women who had attempted to swindle him. It was perhaps because of this incident that in 1939, Erle Stanley Gardner gave the name Casanova to the eponymous hero of one of his Perry Mason mysteries, "The Case of the Perjured Parrot."

Gardner's plot is spectacularly convoluted, though perhaps less strange than the tale of Apsethos the Libyan, which was apparently believed by several historians in classical times. Apsethos taught a flock of caged parrots to say, "Apsethos is a god," and then released them all over the country in the hope that gullible folk would believe them. This ruse was allegedly foiled by a wily Greek who recaptured some of them and taught them to recite instead, "Apsethos compelled us to say that he is a god."

The most celebrated parrot in 19th-century literature was itself apparently mistaken for God. This is Loulou, in Flaubert's story "A Simple Heart" — which was partly inspired by a newspaper report of a man driven mad by unrequited love, who lived alone with a parrot that he came to regard as holy. Loulou's owner, Félicité, is a pious and very unfortunate servant whose only consolation is her adored bird, which she somehow connects with the Holy Spirit. Flaubert describes how, on her deathbed, Félicité seems to see the heavens open to reveal a gigantic Loulou welcoming her up to paradise.

At least since the early Middle Ages, fictional parrots have been credited with unnatural wisdom and sometimes even foresight. An anecdote from the 13th century has the future emperor Charlemagne greeted by prophetic parrots similar to the witches in "Macbeth." In later medieval European art and literature, parrots are often associated with the Virgin Mary or the Trinity, so it is perhaps not surprising that they seem to be popular with nuns. In a French mock-heroic poem from 1734, a pious parrot named Ver-Vert is the prize possession of a convent in Nevers. On a journey to another convent which wants to borrow him, he is mocked for his prayers and undergoes a personality change, opting for the coarse and ribald persona that is later found in the parrots of Mark Twain, Robert Louis Stevenson, Washington Irving and many other writers, not to mention endless reports from the BBC of embarrassingly obscene birds.

Sent home in disgrace, Ver-Vert emerges spiritually reborn after months of penance, whereupon the overjoyed nuns of Nevers shower him with candies, and he dies of indigestion. Plus ça change. In "Alex and Me," Pepperberg quotes a condolence e-mail message sent to her from a priory of Benedictine nuns in Connecticut who have their own beloved parrot. The prioress writes of "these wondrous creatures who have shown us something more of God than we could have ever believed possible." Perhaps go easy on the candies, ladies.

For some reason, death is a leading motif in 20th-century parrot fiction. Monty Python's dead-parrot sketch is perhaps the most famous instance, but it is far from unique in its absurdity. As Bruce Boehrer notes in his literary study "Parrot Culture" (2004), the novels of Gabriel García Márquez provide a striking brace of examples. In "One Hundred Years of Solitude," a man kills a parrot and places it in a pot of stew; and in "Love in the Time of Cholera," a parrot emerges from a pot of stew in order to kill a man. Evelyn Waugh's "Loved One" memorably records the death of Sambo, a parrot who belonged to the mother of the head undertaker at the Whispering Glades funeral home. And in "Wide Sargasso Sea," Jean Rhys's prequel to "Jane Eyre," the life of Rochester's first wife is saved by the death of her parrot.

Literary theorists have spun some complex tales of their own about the roles, symbolism and significance of talking parrots in prose and verse. It has been said that the parrots in French literature are always identified with language itself, that they subvert the notion of absolute truth and that they point the way to challenges to the status quo. At least one parrot, though, seemed to tire of the game of literary analysis and turned the tables on his interpreters. In "Zazie in the Metro" (1959), a novel by the playful French philosopher-writer Raymond Queneau, a young girl is accompanied on her adventures through Paris by a parrot called Laverdure. Laverdure responds to all occasions with the same — dare one say parroted? — remark: "Talk talk, that's all you can do."

Anthony Gottlieb is the author of "The Dream of Reason: A History of Philosophy From the Greeks to the Renaissance."

http://www.nytimes.com/2008/10/12/books/review/Gottlieb-t.html?8bu&emc=bub1

A Series of Unfortunate Events

By ELISSA SCHAPPELL

WHEN WILL THERE BE GOOD NEWS?

By Kate Atkinson

388 pp. Little, Brown & Company. $24.99

It's hard to imagine a novel starting in a more gripping or terrifying way than Kate Atkinson's new mystery, "When Will There Be Good News?" A stranger with a carving knife ambushes a young family on a deserted country lane, killing mother, daughter, baby, even the dog. The only survivor is the fleet-footed daughter Joanna.

Thirty years later, Joanna is Dr. Joanna Hunter, married with a baby and dog of her own, and the man convicted of the slaughter of her family is being released from prison. On that same day, the ex-army man and ex-detective Jackson Brodie is accidentally boarding a doomed train, headed not in the direction of London and his new wife, but toward Edinburgh and an old flame, Detective Chief Inspector Louise Monroe, "the one that got away." And as fate would have it Reggie Chase, a plucky teenage girl, recently orphaned and wise beyond her years, sits translating the "Iliad" just feet from the railroad tracks. Now there's a setup.

Fans of Atkinson's novels like "Behind the Scenes at the Museum," which won the 1995 Whitbread Book of the Year, and her two previous literary detective novels, "Case Histories" and "One Good Turn," both featuring the rugged yet sensitive Brodie, can expect "When Will There Be Good News?" to follow standard procedure.

Fact: Atkinson doesn't write typical crime novels, but literary hybrids.

Exhibit A: Unlike Agatha Christie's briskly plotted whodunits, Atkinson's thrillers unfold leisurely. In this case, chapters provide alternating points of view, which, while intimately acquainting us with each character's back story, can at times derail the novel's narrative momentum.

Exhibit B: Unlike the hard-boiled dicks and dames in Chandler's and Hammett's page-turners, Atkinson's characters don't exchange shotgun blasts of dialogue or see the world through a dirty glass. They refer to the works of Browning and Hemingway, and quote Scripture. They sing nursery rhymes and dirges, and crack literary jokes. Louise characterizes her previous relationship with Brodie as being "as chaste as protagonists in an Austen novel. All sense and no sensibility, no persuasion at all." And struck by the mounting death toll of those close to her, steady-as-she-goes Reggie wonders whether she's more "troubled teen or angel of death?"

Exhibit C: There will be no corraling of suspects into a darkened parlor. No show-stopping moments of revelation à la Sir Arthur Conan Doyle, where the motive and manner of the crime are exposed. Why, you ask? Because there is little mystery as to who committed the crimes, and few clues as to why. The mysteries Atkinson is most invested in are those of the human heart.

Note: There are, however, elements of the classic mystery that Atkinson does embrace, most notably the coincidence. As Jackson Brodie says, "A coincidence is just an explanation waiting to happen." To wit: When Brodie's train collides with a car stranded on the tracks, his whole life is literally turned upside down. His wallet, his Blackberry and his memory all go missing. As he sprawls half-dead on the hillside,

it is Reggie Chase who breathes life back into him — coincidentally, she learned CPR during her training to become a mother's helper to Dr. Joanna Hunter. And how curious that Hunter and her son are the same age as her mother and brother were when they were stabbed to death.

More evidence of Atkinson's fondness for coincidence: It just so happens that the man Reggie has saved is not only a sleuth but "a shepherd," who "couldn't rest until the flock was accounted for, all gathered safely in. It was his calling and his curse. Protect and serve." How fortunate that when Joanna Hunter and her baby suddenly disappear and her handsome ne'er-do-well husband, under suspicion of arson, attempts to stonewall Reggie's efforts to locate her, Jackson is ready to take the case. Though whether or not Joanna Hunter needs protecting, whether or not she's still a victim, remains to be seen.

Note: Despite an arresting first chapter, what seems of most interest to Atkinson isn't the solving of crimes, but the solving of the problem of being alive. What happens to those left behind, the ones held hostage by sorrow and disappointment? How do we pull ourselves out of the rubble of grief? How do we cope with the death of a loved one, transcend a childhood worthy of Dickens, survive the accident of having married the wrong person? How do we get what we need?

Conclusion: While Atkinson engages us with black humor and rich character development and while Reggie Chase is a delight, the absence of sustained suspense begins to fray our connection to the characters. Sensing perhaps that she's lollygagging, Atkinson sprints for the last 75 pages, delivering a rushed, overly neat ending that, while cleanly tying up the big threads, leaves many questions about the characters and their futures unanswered. My powers of deduction suggest Atkinson's "When Will There Be Good News?" is, and this is just a theory, a setup for the next, and, I trust, more satisfying Jackson Brodie mystery. Of course I don't have proof. That's just a guess.h

Elissa Schappell is editor at large for Tin House magazine, a contributing editor at Vanity Fair and the author of "Use Me," a novel.

http://www.nytimes.com/2008/10/12/books/review/Schappell-t.html?8bu&emc=bua2

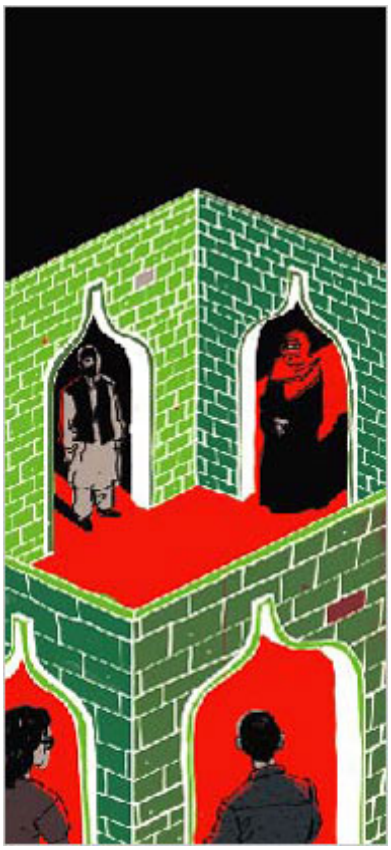
Torch Song for Afghanistan

By LORRAINE ADAMS

THE WASTED VIGIL

By Nadeem Aslam

320 pp. Alfred A. Knopf. $25



THE geography of Afghanistan is a melodrama of mountains, caves and barren plains. The evidence of the country's violent history is obvious — a large population of amputees, an architecture of mortared roofs and shell-shocked walls. Anyone can tell you stories of offhand depredation. The women behind the cerulean burkas let you know that the horrors aren't over yet.

Easy for even a casual visitor to grasp, at least superficially, Afghanistan is a difficult place for a serious writer. The lessons of Primo Levi and Imre Kertesz — that less is more when it comes to rendering brutality on a monstrous scale — have yet to be learned by most of those who hope to capture this country in literature. Yasmina Khadra's novel "The Swallows of Kabul" is thick with purple passages. Khaled Hosseini's two best-selling novels, "The Kite Runner" and "A Thousand Splendid Suns," are little more than exotic potboilers. Perhaps that's why some of the most powerful recent writing about Afghanistan has appeared in travel books: Jason Elliot's "Unexpected Light" and, most impressively, Rory Stewart's understated account of his solitary walk across the country, "The Places In Between." So far, the most intelligent fiction has kept a tight focus. Novels by Francesca Marciano ("The End of Manners") and James Meek ("We Are Now Beginning Our Descent") and Tom Bissell's wonderful short story "Death Defier" all feature Western journalists as protagonists, English-speakers whose encounters with Afghanistan refrain from any ambitious sweep.

Nadeem Aslam, a Pakistani novelist who lives in England and has visited Afghanistan extensively, has now made his own bid for the fictional peaks. In "The Wasted Vigil," he ranges across the country's ancient and modern history, punctuating his narrative with cross-cultural allusions. Unafraid of political complexity, he is also unflinching in his examination of depravity — of torture, rape and gore. Yet his writing also encompasses tenderness.

Aslam's characters are intricately wounded and geographically diverse. Lara is a Russian who has been attacked with a tire iron for letting her feet point toward Mecca while sleeping amid a crowd of travelers. She has come to Afghanistan to find her long-lost brother, a soldier who is, she discovers, also a rapist. Casa, wounded in a trip-wired field of flintlock guns on tripods, is an Afghan orphan raised by Taliban jihadists in sadistic training camps. Marcus, a Briton who is missing a hand, lost his Afghan wife to the Taliban, and their daughter to the Soviet invasion. David, an American, is a former spy whose brother disappeared during the fighting in Vietnam.

They all come together in Marcus's house in the countryside near Jalalabad. It is a noisy house, and for a particularly bizarre reason. Marcus's now deceased wife, forced by the Taliban to cut off her husband's hand in front of a crowd at a local stadium, went mad in the aftermath and nailed their extensive book collection to the ceiling. The books often fall down with thuds and thwacks.

It is also a dirty house because Marcus was forced to put mud on the walls to hide painted images of lovers that had been banned by the Taliban. And it is a suggestive house, filled with strange scents, because Marcus's defunct perfume factory lies under the ground nearby. As if this weren't unsettling enough, a giant relic, an ancient stone Buddha's head, was uncovered during the excavation and left in place on the factory floor.

As the novel unfolds, Aslam meticulously includes all the documented savagery of Afghanistan: land mines (especially those that look like toys, designed to lure children); inventively vicious rapes (of girls, of a main character, of a historical figure); rough public justice, including a stoning and the amputation; warlords and their intractable feuds;misguided Americans and their obstinate meddling; abominable methods of torture, inflicted by both warlords and Americans.

Aslam's restrained first novel, "Season of the Rainbirds," centered on the delivery of a bag of letters lost for almost two decades after a train crash. Its characters — a rather unwieldy group of Pakistani villagers — were idiosyncratic individuals, not stand-ins for weighty issues. His second novel, the critically acclaimed "Maps for Lost Lovers," which focused on a Pakistani immigrant community in England, earned Aslam a reputation for compassion, politically engaged complexity and a lush writing style.

THERE is moral complication on display in "The Wasted Vigil," but this novel is more expansive than his previous ones, documenting several decades intensely and several centuries tangentially. It seeks to reveal the psyche not just of one rural village or one immigrant community but of Britain, the Soviet Union, the United States and Afghanistan. The revelations throughout are artful, at times carrying a dramatic emotional impact. But Aslam's unexpectedly florid writing, as in the following passages, often makes reading this novel painful:

"The grandson of a watchsmith, he appeals for leniency from the god who decrees the point of no return. The moment the arrow leaves the bow, the moment when sexual climax is unstoppable, the moment when poetic inspiration begins."

"The pomegranate was on a table close to the fireplace. She slit it open now. The outer layer of scarlet seeds had been warmed by the flames. The temperature of menstrual blood, of semen just emerged from a man's body."

"David's voice was like music being played to the metronome inside the young boy — it had the unhurried rhythm of James's own thoughts."

Perhaps Afghanistan, a place of extremes, invites this overblown style. It certainly seduced Aslam, a writer of considerable talent, into thinking he could render its titanic tragedies by pushing his language into operatic effusion.

Lorraine Adams, the author of a novel, "Harbor," is a regular contributor to the Book Review.

http://www.nytimes.com/2008/10/12/books/review/Adams-t.html?8bu&emc=bua2

I Is Another

By RICHARD HELL

RIMBAUD

The Double Life of a Rebel

By Edmund White

192 pp. Atlas & Company. $24

More aspects of Rimbaud are known than can be assimilated: his vastly various, influential and innovative poetry itself; his expressive letters; his scornful and unhesitating permanent abandonment of poetry at the age of 20; the anecdotes of his contemporaries showing him as a drunken, filthy, amoral homosexualteenager who becomes a reserved, hard-working, responsible and respectable (if misanthropic and disgust-ridden) adult merchant and explorer. One would have to be a genius oneself to grasp the full significance of Arthur Rimbaud, or at least have the ability to hold many opposed ideas in one's mind at the same time and still function fully. Numerous writers have sought to demonstrate their qualifications along these lines by publishing studies of him.

This biography by Edmund White is the digest version. If you're casually curious about the fuss made over Rimbaud and want the lowdown from someone literate, it will satisfy you, without badly misleading. This approach seems to be the plan behind the series of short lives, each written by a distinguished author (often a novelist or scholar, not usually a professional biographer) and edited by James Atlas, first for Penguin, now for Atlas & Company, of which "Rimbaud" is the latest entry. Seems like a worthy idea; there are a lot of famous artists and thinkers one wouldn't mind getting a convenient little handle on.

Still, this book irritates a bit with some of its complacent assertions, such as that Rimbaud's famous declaration (in a letter written at age 16), "Je est un autre" ("I is someone else"), "meant that in the act of introspection we objectify the self, we experience our self as if it belongs to another person," which takes banality to the point of distortion. It's self-evident that examining oneself predicates a pair. But "I is another" is exhilarating, a revelation, which, at the very least, acknowledges one's undifferentiated human substance or collectivity, as for a child . . .

On a blue summer evening I shall go

down the path

And, brushed by wheat, walk on the

fine grass.

Dreaming along, I'll feel the coolness

under my feet

And bathe my bare head in the poetic

wind.

I won't speak, I will not even think,

But infinite love will geyser up in my

soul,

And I'll go far, far away, like a Gypsy

Into the wilds — as happy as if I were

with a woman.

. . . who is present at his own invention as an actor in life (in more ways than two: the above is Rimbaud's second known post-schoolwork poem, written at the age of 15, and it foresees his life — if in an innocent, far more lush and joyous light than it would actually be played out), like "the wood that becomes a violin" and "tough luck" to it for that fate (a letter at 16), or as when "the brass awakes as horn" (ditto) and, as Rimbaud adds, "I am present at the explosion of my thought. I watch and I listen to it. I wave the baton; the symphony murmurs from its depths or comes leaping onto the stage" (ditto as well). One witnesses one's invention by life, while one plays oneself like a symphonic conductor, in the meantime dreaming a million dreams. . . . The statement of it is thrilling, is uncanny, and it's words. This is what Rimbaud gives us. There is no limit to his reach, and it doesn't exceed his grasp.

The best full-scale English-language biography of Rimbaud is Graham Robb's (published in 2000), as White agrees in his book, incorporating such Robb insights and researches as the tally of time the vagabond rebel-boy spent at home with his mother (actually almost five of the approximately nine years between his first escape from her farm at 15 and his eventual departure from Europe in 1880), and that, contrary to legend, Rimbaud ultimately did quite well as a merchant and weapons salesman, accumulating a small fortune (the equivalent of well over $100,000, according to Robb) in the course of his approximately 11 years in Africa.

White uses his own translations to demonstrate Rimbaud's poetry. They will do in context, but, for the interested, I'd recommend Wyatt Mason's two-volume Modern Library edition of Rimbaud's complete writings (works and letters). Any translation requires special focus from a reader. Of the large-scale Rimbaud efforts, the Mason is the most alive.

Because that's what distinguishes Rimbaud: of all poets, his writing is the most alive, even now and here, in another language more than a hundred years later. He learned very much from Baudelaire, and in many ways Baudelaire remains his master, but Baudelaire was a poet of ennui (and dreams), while Rimbaud reels with the most robust — if often contemptuous — vitality (and dreams). This is a function of his peasant, punkish ultra-confidence in the value of his pure (unegotistic) honesty, as an adolescent seeing through the adult hypocrisy and convention veiling the sensual, unsane world; a boy to whom language was understood as inextricable (to the seer) from reality, and who knew how to wield those words, existence itself. He didn't have to try to translate his perceptions into language; he understood that he must see in language, and he saw with the supreme, paradoxically unformed, fluid ego of an adolescent. His honesty and insight never waned — he just grew up and lost interest in the unrewarding expression of the visions.

Richard Hell is writing an autobiography.

http://www.nytimes.com/2008/10/12/books/review/Hell-t.html?8bu&emc=bua2

Crucibles

By GERMAINE GREER

THE ENEMY WITHIN

2,000 Years of Witch-Hunting in the Western World

By John Demos

318 pp. Viking. $25.95

John Demos, the Samuel Knight professor of history at Yale, has built a formidable reputation with his five scholarly books on early American history. His new book, “The Enemy Within,” is very different. Not only is it intended for a broad readership, but its putative subject, as indicated by the subtitle, is no less than “2,000 years of witch-hunting in the Western world.” Demos tells us in his introduction that the plan for the book came from his publisher, but he does not really explain why he accepted the challenge. To paint so vast a picture requires a broader brush and rather more intellectual arrogance than Demos has at his disposal. As he dispatches three-quarters of his time-span in a mere 70 pages, so that he can get down to the detailed discussion of events in early America that takes up most of the book, it could be said that he has ducked the challenge.

The institution of what we would call a “witch hunt” is only tangentially related to the practice of witchcraft. Demos understands that any group can be demonized; he mentions the cases of the Knights Templar, the Waldensians and the Cathars, but he could have mentioned many more. He makes a strange muddle of the fact that belief in witches was considered heresy by the fathers of the early church, partly

because he appears not to understand that medieval witch hunts directed themselves toward the detection of heretics as the real enemies within and paid scant attention to charlatans. Only people baptized as Roman Catholics could be prosecuted as heretics; the enemies the Inquisitions addressed themselves to were those that infiltrated believers' most secret souls. The Dominican order, known punningly as "domini canes," or hounds of the Lord, was founded in the 13th century specifically to hunt down Cathars.

This reader would have been intrigued to find out what Demos, with his in-depth understanding of the events in Salem, would have made of the judicial murder of Joan of Arc, whom the British would have tried as a witch if only Anne of Burgundy, Duchess of Bedford, deputed to examine her, had not testified that she was a virgin. Joan was tried as a heretic instead, found guilty and burnt alive at the age of 19. Like the teenagers in Salem, Joan could cite spectral evidence. Whether her voices would be classed as saints from heaven or goblins damned depended on her judges. The British burned her; 25 years later the French retried her and declared her saint and martyr.

Many of the female saints of the early church behaved in ways that in a different setting would have brought an accusation of witchcraft. Many had relationships with birds and beasts identical to those that witches were thought to have. The seventh-century saint Melangell, for example, sheltered a hare beneath her skirts as she knelt praying in a wood and when the following hounds caught up they fell back whining; later, witches would be thought to inhabit the bodies of hares.

Moreover, Demos is ill equipped to explain why it is that the most frightful witch hunts of the 16th and 17th centuries occurred in Protestant Europe, where the authority of the papacy had been rejected and minority sects and millennial cults were springing up everywhere. He disposes of the most diligent witch hunters in Europe in a few brief synoptic paragraphs that add little to our understanding of why 9 million — or was it 50,000? — people were tried as witches between 1550 and 1700.

It is still a sin for a Catholic to consult a witch or a necromancer, but under Catholicism there was no systematic attempt to drive such practitioners out of the community. Even on the eve of a great witch hunt the merry wives of Shakespeare's Windsor occasionally availed themselves of the services of the Witch of Brentford, who had nothing worse to fear than being beaten out of the house by an angry husband. In much of the Western world witches and witchcraft are as much a part of the regular business of life as they were in premodern times. In rural Italy to this day a woman who suspects her husband of infidelity will consult a strega, who will give her a fascino, a charm to stop him from straying. In 2003 the charismatic life coach Carole Caplin was described as having "cast a spell" over the better educated wife of the British prime minister. In hanging Caplan's "magic crystals" round her neck Cherie Blair was probably a victim of false science rather than guilty of superstition, but in its early days experimental science too was heresy. Women's magazines now run page after page of advertisements for fortunetellers and other charlatans, who exploit with impunity the gullibility of their readership.

Demos's account of the travels of the "Malleus Maleficarum," the "Hammer of Witches," compiled by Heinrich Kramer and Jakob Sprenger and first published in Latin in Strasbourg in 1487, with many more Latin editions in 40 years, is marred by his own faith in text as authority. Early printings are a strange selection of texts partly because of the vicissitudes of financing book production; "Malleus Maleficarum" is a pretty good example of a book that every institution had to own, rather than a book everyone wanted to read. Demos might have been inspired to reconsider if he had known a little more about the "eccentric Catholic intellectual" Montague Summers, who revived it in 1928.

In the last portion of "The Enemy Within" Demos includes a series of brief essays on American witch hunts — the various anti-Masonry scares, the persecution of the Bavarian Illuminati, the anarchists following the Haymarket riot, the different Red scares and McCarthyism, and the child sex-abuse panic. The discussion of all of these is brief and superficial. Demos keeps asking himself whether these episodes could be correctly described as witch hunts, which of course they can. The real question is whether what happened in Salem in 1692 is an aspect of the same process. No witch-finder general orchestrated the

events in New England. Demos includes an overview of contemporary interpretations of "what happened at Salem" under 20 headings, an ideal format for undergraduate course notes but hardly suitable for a book.

Demos is oddly hampered by being unable to avail himself of studies of non-Western witchcraft, like G. M. Carstairs's classic "Death of a Witch" (1983), which carefully traces the process by which a poor old Mewari woman incurred the suspicion of the other inhabitants of her tiny village in India, capitulated to their version of her character and motives, and was ultimately beaten to death. Demos is probably right in blaming base misogyny for the predominance of women among those persecuted as witches, but such reflections will not help us to understand why, how and when modern governments will resort to witch hunting as a way of shoring up their own authority. The issue is important because once again we find ourselves enmeshed in a "war on terror," in which the principal strategy is the fomenting of terror. The imagined enemy in our midst is now the Islamic fundamentalist. Miscarriages of justice proliferate.

In Australia last year the Indian-born doctor Mohammed Haneef was arrested and held in solitary confinement for at least 11 days on a charge of assisting terrorism because months before, when he left England, he had given the SIM card from his mobile phone to a relative. When he was finally charged and let out on bail, his visa was revoked. Rather than allow himself to be deported, Haneef opted to remain in detention until his case was heard. He was released after three weeks when it was realized that the information laid against him was demonstrably false. The case is now the subject of an inquiry, but what seems clear is that, in their eagerness to find a scapegoat, investigators both in Britain and Australia overinterpreted and misrepresented what turned out to be an innocent circumstance. The real enemy within is fear itself.

Germaine Greer is the author, most recently, of "Shakespeare's Wife."

http://www.nytimes.com/2008/10/12/books/review/Greer-t.html?8bu&emc=bua2

Rich Bank, Poor Bank

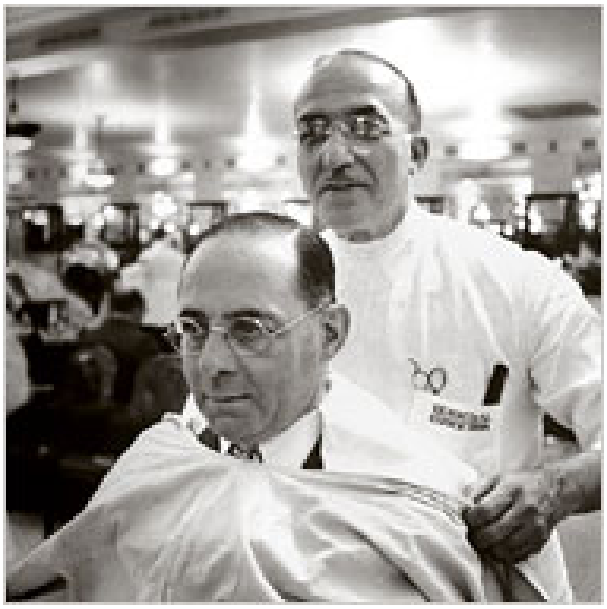
By GEORGE ANDERS

THE PARTNERSHIP

The Making of Goldman Sachs

By Charles D. Ellis

729 pp. The Penguin Press. $37.95



SAVVY investors relish “pairs trading.” They pick two companies in similar businesses, like Nike and Reebok. Then they buy shares of the one judged to be a better value, while making an equal-size bet against the weaker one. Get it right, and tidy profits ensue.

In recent years, Wall Street’s own destiny has played out like a gigantic pairs trade. Many of the best-known securities firms, including Goldman Sachs, Lehman Brothers and Bear Stearns, started from comparable backgrounds 80 to 150 years ago. They moved into similar specialties in modern times, earning multibillion-dollar profits at their apex.

Yet as of this autumn, Goldman Sachs was practically alone among its old Wall Street peers as a solvent, independent entity. Goldman survived the credit calamities by redefining itself as a commercial bank and getting a cash infusion from the legendary investor Warren Buffett. Meanwhile, Bear Stearns and Lehman Brothers have collapsed into oblivion.

What happened? When Charles D. Ellis began serious work a decade ago on “The Partnership,” an immense, detailed history of Goldman Sachs, he couldn’t have expected various firms’ fates to diverge so sharply. But as he explains in his preface, he started out believing that Goldman Sachs had become Wall Street’s strongest and most enduring player because it had a better way of doing things.

His mission: to figure out Goldman’s edge. Success, he concludes, started with hiring ambitious people from working-class backgrounds. If their parents were postal clerks or groundskeepers, they were likely to work relentlessly to secure a better life — and help Goldman amass profits in the process. Niceness and at least the appearance of humility counted, too. Goldman nearly hired the junk-bond wizard Michael Milken early in his career but backed away when it decided he was demanding too big a slice of future profits for himself.

Teamwork mattered as well. Goldman started splitting top jobs in 1976, when the managing partner, Gus Levy, died without choosing between two possible successors. The heirs apparent shared command, and it worked out well. That arrangement was repeated in many departments, even though management

consultants predicted it would fail. Shared command meant Goldman wasn't always the fastest into a promising new area, but the firm made far fewer blunders tied to any single executive's hubris.

Tenacious to a fault, Goldman partners didn't just work long hours; they came to think of the firm as their true family, with spouses and children paying the price. Partners kept most of their money in Goldman for decades, leading them to run the business wisely for the long haul, rather than grabbing huge profits from alluring but risky areas that could lead to collapse.

Scandals periodically clipped Goldman, but never fatally. The worst crisis involved some horrid investments just before the 1929 crash; lesser brushes with trouble involved insider trading in the '80s, unwise ties to the rogue British publisher Robert Maxwell in the early '90s and overly rosy investment research during the Internet bubble of 1999-2001. Culprits were identified; penalties were paid; and at least by Ellis's account, Goldman emerged with better controls and procedures each time.

Vast numbers of current and former Goldman executives shared their stories with Ellis, a level of access that both helped and hurt. The book is rich with insider lore, as well as the closed-door dramas of partnership clashes. But outsiders' voices are disappointingly faint. And some minor episodes, like the buildup of Goldman's corporate bond business in the '70s, take far too long to unfold, as each participant gets to reminisce.

Ellis writes as a Wall Street loyalist. He ran Greenwich Associates for 30 years, providing research and consulting to securities firms, including Goldman Sachs. That experience graced him with a sure hand in writing about the world of traders, analysts and deal makers. But it makes it harder for him to put Wall Street's great moneymaking abilities into a broader context — either as a key part of American progress or just an unwelcome form of profiteering.

The book nods briefly to the ways that Goldman officials shuttle into powerful government jobs. Treasury Secretary Henry Paulson used to run Goldman; so, too, did former Treasury Secretary Robert Rubin and former Deputy Secretary of State John Whitehead. More insights on this pathway would have been welcome.

Ellis does point out a fascinating quirk in tax law: wealthy political appointees who put their assets into blind trusts needn't pay capital gains taxes on any sales. So public service isn't always a low-paying sacrifice; it can also help outwit the tax man. Ellis estimates Paulson could have saved as much as $200 million this way.

The financial crises of 2007-8 win only a few pages of notice at the end of the book. Goldman's earnings and stock price have sagged, but the firm remains profitable, which is more than some of its now-extinct rivals can say. Ellis suggests that's no accident.

As he tells it, Goldman largely cleared its portfolios of mortgage troubles in April 2007, acting far faster than other firms, some of which keep struggling to extricate themselves from ill-advised loans. Instead of suffering helplessly as mortgage values declined, Goldman switched tack and earned as much as $1 billion in a quarter by betting on a further drop in mortgage-index values.

Nimble trading, indeed.

George Anders is the author of three books, including "Merchants of Debt: KKR and the Mortgaging of American Business."

http://www.nytimes.com/2008/10/12/books/review/Anders-t.html?_r=1&8bu&emc=bua2&oref=login

French Writer Wins Nobel Prize

By SARAH LYALL

LONDON — The French writer Jean-Marie Gustave Le Clézio, whose work reflects a seemingly insatiable restlessness and sense of wonder about other places and other cultures, won the 2008 Nobel Prize in Literature on Thursday. In its citation, the Swedish Academy praised Mr. Le Clézio, 68, as the "author of new departures, poetic adventure and sensual ecstasy, explorer of a humanity beyond and below the reigning civilization."

Mr. Le Clézio's work defies easy characterization, but in more than 40 essays, novels and children's books, he has written of exile and self-discovery, of cultural dislocation and globalization, of the clash between modern civilization and traditional cultures. Having lived and taught in many parts of the world, he writes as fluently about North African immigrants in France, native Indians in Mexico and islanders in the Indian Ocean as he does about his own past.

Mr. Le Clézio is not well known in the United States, where few of his books are available in translation, but he is considered a major figure in European literature and has long been mentioned as a possible laureate. The awards ceremony is planned for Dec. 10 in Stockholm, and, as the winner, Mr. Le Clézio will receive 10 million Swedish kronor, or about $1.4 million.

At an impromptu news conference in Paris at the headquarters of his publisher, Éditions Gallimard, Mr. Le Clézio seemed unperturbed by all the attention. He said he had received the telephone call telling him

about the prize while he was reading “Dictatorship of Sorrow,” by the 1940s Swedish writer Stig Dagerman.

“I am very happy, and I am also very moved because I wasn’t expecting this at all,” he said. “Many other names were mentioned, names of people for whom I have a lot of esteem. I was in good company. Luck or destiny, or maybe other reasons, other motives, had it so that I got it. But it could have been someone else.”

In a news conference in Stockholm after the announcement, Horace Engdahl, the permanent secretary of the Swedish Academy, which awards the prize each year, described Mr. Le Clézio as a cosmopolitan author, “a traveler, a citizen of the world, a nomad.”

“He is not a particularly French writer if you look at him from a strictly cultural point of view,” Mr. Engdahl said. “He has gone through many different phases of his development as a writer and has come to include other civilizations, other modes of living than the Western, in his writing.”

Last month, Mr. Engdahl provoked a wave of indignation when he criticized American writers as “too isolated, too insular” and “too sensitive to trends in their own mass culture.” Europe, he declared, is “the center of the literary world.” No American has won the Nobel literature prize since Toni Morrison did in 1993.

Mr. Le Clézio was born in 1940 in Nice and raised in a nearby village, speaking English and French. His father, a British doctor with strong family connections on the island of Mauritius, lived in Africa for many years while Jean-Marie was growing up. When he was 7, Jean-Marie traveled to Nigeria with his family and spent a year out of school, an experience he recalled later in his semiautobiographical novel “Onitsha” (1991).

He studied English at the University of Bristol, graduated from the Institut d’Études Littéraires in Nice, received a master’s degree at the University of Aix-en-Provence and wrote his doctoral thesis for the University of Perpignan on the early history of Mexico. He has taught at colleges in Mexico City, Bangkok, Albuquerque and Boston; has lived among the Embera Indians in Panama; and has published translations of Mayan sacred texts.

His first marriage ended in divorce; he married again in 1975. He and his second wife, Jemia, who is from Morocco, divide their time among Nice, Mauritius and Albuquerque.

Mr. Le Clézio became a literary sensation with his first novel, “Le Procès-verbal” (1963), published in English as “The Interrogation.” The novel follows the meanderings around town of a sensitive young man who winds up for a time in a mental hospital. It has been compared in mood to Camus’s “The Stranger.”

But his style evolved in later books, becoming more lyrical and accessible, and taking on bolder and more sweeping themes, often with an ecological underpinning.

“The latter part has a very contemporary feel,” said Antoine Compagnon, a professor of French and comparative literature at Columbia University. “It has an openness to others, to other cultures, to the South, to minorities. This is a very current sensibility.”

Bronwen Martin, a research fellow in the French department at Birkbeck College in London, said Mr. Le Clézio’s work had recently become more popular among academics. “I think it’s because of his more explicitly postcolonial work,” said Ms. Martin, who has written two books on Mr. Le Clézio’s writing.

In 1980, Mr. Le Clézio published “Désert,” the story of a young nomad woman from the Sahara and her clashes with modern European civilization. The book was considered his definitive breakthrough, and it became the first winner of the Grand Prix Paul Morand, awarded by the Académie Française.

In the United States, David R. Godine, one of a handful of publishers that have released Mr. Le Clézio’s works in English, plans to issue a paperback edition of “The Prospector” (translated from “Le Chercheur d’Or” in French) and plans to publish “Désert” in English.

In a reminder that politics and culture are closely intertwined in France, the prime minister, François Fillon, said in a statement that the award “consecrates French literature” and “refutes with éclat the theory of a so-called decline of French culture.”

Mr. Le Clézio is not one to seek the limelight. He once described himself in an interview as “a poor Rousseauist who hasn’t really figured it out.”

He said, “I have the feeling of being a very small item on this planet, and literature enables me to express that.”

Asked at the news conference if he had any message to convey, Mr. Le Clézio said: “My message will be very clear; it is that I think we have to continue to read novels. Because I think that the novel is a very good means to question the current world without having an answer that is too schematic, too automatic. The novelist, he’s not a philosopher, not a technician of spoken language. He’s someone who writes, above all, and through the novel asks questions.”

Reporting was contributed by Alan Cowell, Chine Labbé and Basil Katz from Paris, and Motoko Rich from New York.

http://www.nytimes.com/2008/10/10/books/10nobel.html?8bu&emc=bub2

Aquatic alien 'thugs' set to meet

By Rebecca Morelle
Science reporter, BBC News

Claw to claw - how do the Chinese mitten crab and non-native crayfish size up?

Two of the UK's worst aquatic invasive species are set to meet.

Scientists believe that the ranges of the plague-carrying non-native crayfish and the fierce Chinese mitten crab are beginning to overlap.

Since their introduction, both of these animals have had a dramatic impact on local ecology and are especially harmful to native species in the UK.

Scientists are unsure what will happen when the two alien invaders eventually cross paths.

Various sites around the UK have been highlighted as potential meeting places; they include the River Lee, in the South, and the River Ouse and the Aire in Yorkshire.

The non-native crayfish was first introduced to the UK in the late 1970s for aquaculture, but it soon began to spread.

Where the non-natives move in, the white claws are lost
Stephanie Peay

Several different species now exist in the UK's waterways, but the signal crayfish (*Pacifastacus leniusculus*), which comes from North America, has so far caused the most damage - thanks, in part, to a disease it carries.

Ecologist Stephanie Peay told the BBC: "The plague does not seem to harm the non-natives, but if our native white-clawed crayfish [*Austropotamobius pallipes*] encounter it, they die within weeks."

Even if the non-native crayfish do not carry the plague, they still cause problems for the UK's white-clawed species.

Ms Peay describes the crustaceans as "aquatic thugs".

She explained: "Where the non-natives move in, the white claws are lost. Survey work has shown that it only takes between four and seven years from first arrival to achieve a complete local extinction.

"The only future for the white claws is in isolated water bodies that are completely free from non-native crayfish."

And it is not only the white-clawed crayfish that are at risk.

The alien species is also having a big impact on other elements of the aquatic ecosystem and its burrows are also causing huge damage to water banks.

Voracious predator

Until now, non-native crayfish have been seen as one of the worst invaders in the waterways - but could another alien crustacean knock them off top spot?

The Chinese mitten crab - so called because of its furry, mitten-like claws - was first recorded in the UK in 1935.

They eat anything that they can get their claws into
Paul Clark, NHM

However, it really began to take hold in the 1980s after large numbers were thought to have been unleashed into the Thames and other rivers around the UK from ships' ballast water.

Paul Clark from the Natural History Museum said: "Since the late 80s, their range has been expanding massively.

"It is difficult to estimate the exact population, but I suspect the numbers are in the millions."

The crabs are voracious predators.

Mr Clark said: "They eat anything that they can get their claws into: weeds, fish eggs, snails, molluscs - anything.

"They are just an opportunistic feeder.

"It is hugely disruptive to local ecosystems - nobody has been able to do an assessment on how much damage they actually cause, but it could be quite significant."

Chinese mitten crabs inhabit both fresh and saltwater.

The young are born in coastal regions or estuaries, they then migrate up the river to spend their adult lives in freshwater, before returning back to saltwater years later to breed.

Once in freshwater, they can move huge distances.

Mr Clarke said that in China, some studies have shown they can migrate up to 1,500km (930 miles).

Alien versus predator

In the UK, year upon year, the mittens have been increasing their range.

Philine zu Ermgassen, an aquatic ecologist at the University of Cambridge, said: "Mitten crabs are spreading so quickly at the moment.

> **You could predict a clash between the two**
> Philine zu Ermgassen

"They are now moving further up rivers into areas where there are crayfish - it seems they are starting to encroach upon crayfish terrain."

Scientists do not know what will happen when the two meet.

Ms zu Ermgassen said: "You could predict a clash between the two.

"If this is the case, the mitten crabs do seem to be more dominant as a species - the crabs are very aggressive and very strong. They will also be directly competing for food."

More worrying, however, could be the effect on the local ecosystem of the presence of two aggressive alien crustaceans.

She added: "You could end up with an additive effect. They are both broadly omnivorous and both burrow under banks."

Stephanie Peay says that this could be bad news.

She told the BBC: "What tends to happen when successful invasive non-native species move in is that you tend to get a reduction in the diversity of native species and a reduction in abundance.

"That will be bad for the native environment overall."

Scientific name: *Pacifastacus leniusculus*	Scientific name: *Eriocheir sinensis*
Originally comes from North America	Comes from Asia
Habitat: Found in lakes and watercourses	Found in coastal regions, estuaries, lakes, watercourses

Eats anything available, including other crayfish	Voracious predator, eats anything it can lay its claws on
Life expectancy - up to seven years in the wild	Can live up to nine years in the wild

Sources: GB Non Native Species Secretariat; Environment Agency; Global invasive species database; D Holditch; S Peay; Paul Clark; Marlin; National Biodiversity Network

Have you taken pictures of invasive aquatic species in the UK?

Send your pictures to yourpics@bbc.co.uk or text them to 61124. If you have a large file you can upload here. Read the terms and conditions

At no time should you endanger yourself or others, take any unnecessary risks or infringe any laws.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/7575744.stm

Published: 2008/10/15 04:51:28 GMT

Software blocks car phone users

A safety device which prevents drivers using mobile phones by automatically intercepting calls and text messages when they are moving has been unveiled.

The software tells callers the person they are trying to reach is driving and asks them to leave a message.

Canadian firm Aegis Mobility hopes its system will become available via a monthly subscription fee.

The Royal Society for the Prevention of Accidents (RoSPA) says drivers are four times as likely to crash using a phone.

Phone fine

The DriveAssist system can also tell callers where the person they are trying to reach is located by using satellite navigation technology.

Motorists using mobile phones caused 25 fatal, 64 serious and 259 slight accidents in 2007, according to the Department for Transport.

It has been illegal to use a mobile phone while driving since December 2003 - with offenders facing a £60 on-the-spot fine and three points on their licence.

Our advice to drivers is to switch off their mobile phones... and let voicemail do its job

The Royal Society for the Prevention of Accidents

A RoSPA spokesperson told BBC News: "Our advice to drivers is to switch off their mobile phones when they get behind the wheel and let voicemail do its job."

Meanwhile, a survey by motoring group RAC shows almost half of drivers are seriously distracted by in-car technology - rising to 55% for 17-to-24-year-olds.

The most distracting gadgets were radios and CDs, followed by mobile phones and satnav systems which each put off around a third of drivers.

Heating and air conditioning controls distracted 35% in the survey of 1,034 motorists.

Anti-locking brake systems (ABS) and immobilisers are fitted as standard on new cars, yet only 70% of drivers knew they had ABS and only 68% knew they had immobilisers.

The Department for Transport says distractions account for 12% of all road accidents. In 2007 that amounted to 75 fatal, 411 serious and 2,517 slight accidents.

The RAC survey also looked to the next 20 years of motoring and revealed:

• 23% believe drivers will be able to simply input an end destination then sit back and enjoy the ride.

• 35% think cars will be able to "talk" to each other to pinpoint and avoid traffic.

• 71% believe cars will be able to tell you when you are exceeding the speed limit with half predicting automatic prevention.

• 60% predict fingerprint, voice or breath recognition will replace keys to start a car.

RAC's technical director David Bizley said: "In-car technology has come a long way since the late 80s. The advances have fallen into two camps - active and passive.

"Active technologies such as in-car entertainment are not always positive as they can cause driver distraction, while passive technologies, such as anti-locking brake systems (ABS), are undervalued as they are not fully understood or deemed less important as they come on automatically."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/technology/7669533.stm

Published: 2008/10/14 14:32:20 GMT

Cricket has a spin-off in class

Cricket can help curb bad behaviour in schools and improve concentration in the classroom, researchers have found.

The Institute of Youth Sport at Loughborough University found pupils given the chance to play cricket often brought its values into the classroom.

The researchers were assessing a scheme, run by the Cricket Foundation, which aims to revitalise the sport in state primary and secondary schools.

In 2007, 1,276 schools in England and Wales used the Chance to Shine scheme.

The programme works with cricket clubs to provide 50 hours of coaching and competition for each school in the summer term.

The scheme is raising £25m from the private sector and the government has pledged to match the money raised.

'Improved attitudes'

Dr Ruth Jeanes, research associate at the Institute of Youth Sport, said the study used interviews and surveys of coaches, teachers and pupils to reach its conclusions.

"Cricket particularly has been seen as a gentleman's sport and it's played with particular codes of conduct that maybe we don't see in other sports," she said.

"What the teachers and researchers found is that through improved attitudes and behaviour within PE, teachers have then been able to engage more effectively with pupils when they've got back into the classroom.

"So they've found a way in, a way to relate to pupils, to talk to them when they've got back into the classroom."

Director of the Cricket Foundation Nick Gandon said: "Chance to Shine is a 10-year campaign which we launched in 2005 when fewer than 10% of state schools played five or more cricket matches each year.

"It aims to reach one-third of all sate schools in England and Wales to give children the special benefits of playing competitive cricket and we're delighted that the Institute of Youth Sport report confirms our success in doing this."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/uk_news/education/7669018.stm

Published: 2008/10/14 11:12:52 GMT

World 'to fail' on nature target

By Richard Black
Environment correspondent, BBC News website, Barcelona

The world's governments will fail to meet their agreed target of curbing biodiversity loss by 2010, according to experts questioned by BBC News.

Nearly 200 countries signed up to the target in 2002.

Ten leading conservationists asked here at the World Conservation Congress were unanimous that the goal cannot be met.

All the global indicators of progress are heading in the wrong direction, and few governments have even translated the target into national legislation.

Not all the experts questioned would go on the record, and some said there was a reluctance to embarrass governments over their failures on the matter.

Others suggested the target was unachievable even at its inception six years ago.

Ahmed Djoghlaf, executive secretary of the UN Convention on Biological Diversity (CBD), told BBC News that the 2010 target was achievable if governments acted urgently, but conceded that "all indicators are telling us it is unlikely".

Last week saw the publication of the Red List of Threatened Species, showing that between a quarter and a third of mammals are at risk of extinction.

It also saw the head of an EU-commissioned review into the economics of biodiversity loss say that degradation of forests worldwide cost the global economy more each year than the current banking crisis.

Measured approach

The CBD was agreed at the Rio Earth Summit in 1992, but not until 10 years afterwards did it acquire a firm, supposedly binding target - "to achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on Earth".

Virtually all of the trends that drive the loss of species and ecosystems are continuing at a global level

Georgina Mace, director of the Centre for Population Biology at Imperial College London, said that on the worldwide basis there was absolutely no chance of achieving it.

"We don't have many measures of biodiversity at a global level, but there are a few," she said.

"They measure things like the rate at which species are moving down the categories of threat on the Red List towards extinction, they measure average trends in various populations that have been measured over time, they measure trends on habitat change."

"And at global level, all those data that we have show either continuing downward rates of loss or maybe continuing rates of loss - so some of them aren't getting worse, some are just staying at the same rate of loss - but none of them are getting better," she added.

In addition, virtually all of the trends that drive the loss of species and ecosystems are continuing at a global level.

"The biodiversity convention doesn't deal with cross-cutting issues such as logging, road building, climate change, pollution and the expansion of agriculture," said Gordon Shepherd, director of global policy at the environmental group WWF.

"In reality the people who own decision-making in those areas, be they in governments or in business, have much more power than environment ministers, who don't have tools to get to grips with over-use [of natural resources] or over-consumption."

Political paths

However, Sebastian Winkler from the International Union for the Conservation of Nature (IUCN) said the time period from 2002 to 2010 was so short that we should not have expected to see any changes in the real world.

He suggested a different way of measuring the lack of progress - that only 16 governments have followed through on their commitment to integrate the 2010 target into national plans for tackling biodiversity loss.

Mr Winkler runs an IUCN initiative called Countdown 2010, which aims to engage stakeholders across the world such as local authorities and get them to commit to actions that could improve prospects in their own regions.

"Now the CDB is trying to use Countdown 2010 as a fig leaf for governments - we have 800 partners, they're each taking at least 10 actions, so that's 8,000 actions and that's what they hope to report back as progress," he said.

By March next year, governments must submit assessments of their own progress to the CBD, which will compile them into a global assessment.

Sweet dreams

Thomas Lovejoy, president of the Washington DC-based think-tank, the Heinz Center, said there were signs of progress in different corners of the world, citing Costa Rica and Bhutan among countries that were taking the issue seriously.

> **There's no longer a question whether there will be a sixth major extinction in Earth history. It's already happening, and the question is how big we'll allow it to get**
>
> Thomas Lovejoy
> President, Heinz Center

"In 43 years we've gone from one protected forest in the Amazon to 40% of the area under some form of protection," he said.

"It's not enough to maintain the integrity of the ecosystem but it's a huge achievement."

Europe is the continent which has made most progress towards the target. According to one recent study, it is on course to curb biodiversity loss - but by 2050, rather than 2010.

Mr Djoghlaf said the 2010 initiative had at least put the issue of natural decline into the political and public spotlight.

"There is more and more increased awareness, people are ready to be engaged, business behaviour is changing, biodiversity is becoming a business case because businesses know the market of tomorrow is green, and they have to adapt," he said.

Most of the other leading figures I spoke to here about the issue were not willing to go on the record, although all said in private there was no chance of achieving the target.

Sebastian Winkler said it was important to keep governments engaged with the issue. "Martin Luther King said 'I have a dream', not 'I have a nightmare'," he said.

"And if we always paint nightmares, we will not engage the international community." But Mr Lovejoy suggested that at the level of species and ecosystems, the nightmare was already unfolding.

"There's no longer a question whether there will be a sixth major extinction in Erth history," he said.

"It's already happening, and the question is how big we'll allow it to get."

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Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/7666079.stm

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Gene scan to predict hair loss

Genes that may increase by seven-fold the risk of early baldness amongst men have been uncovered by a team of international researchers.

Analysis of DNA from 5,000 volunteers with and without male-pattern baldness found two stretches of the genome linked with the condition.

One in seven men have both genetic variants, Nature Genetics reported.

Being able to predict hair loss early could boost development of preventive treatments, the researchers said.

An initial study in more than 500 men with early onset hair loss and 500 men without the condition highlighted the two genetic regions which substantially increased the risk of baldness.

> **Male pattern baldness had a strong inherited aspect and understanding that may well lead to better treatments and novel approaches**
> Professor Val Randall, University of Bradford

One was the androgen receptor gene and has already been linked to male-pattern baldness.

The other region is on chromosome 20 and is nowhere near any known gene.

Male pattern baldness, or androgenic alopecia, was already k nown to be hereditary and partly caused by male sex hormones.

More work is needed to work out how this influences risk of baldness, the researchers said.

Their findings were confirmed by the researchers in other groups of people with androgenic alopecia - including women in which they found a weaker association - in the UK, Iceland and the Netherlands.

Inheritance

A second study also published in Nature Genetics found a similar link between hair loss and chromosome 20.

The German researchers said the androgen gene which until now had been the only gene identified with baldness was on the X chromosome which is inherited from the mother.

But chromosome 20 is inherited from both mother and father and may provide an explanation for similarities in hair loss between father and sons, they said.

Dr Tim Spector, from Kings College London, said they found around 14% of men carry both genetic variants.

"At the moment we have a fairly good diagnostic tool for people who might want to know whether they will lose their hair before they are 50.

"There probably won't be many people who want to use that at the moment because there aren't any preventive treatments."

He added he hoped it would stimulate pharmaceutical companies to develop creams, gels or pills to prevent hair loss before it starts.

"The other thing is understanding how these genes actually work - it's likely to provide use with new targets for gene therapy which is actually quite easy to deliver to the hair follicle."

Professor Val Randall, from the Centre for Skin Sciences at the University of Bradford said the work was very exciting, although it was debatable whether men would benefit from finding out about their hair loss risk.

However she added: "It is always easier to prevent than replace hair growth.

"Male pattern baldness has a strong inherited aspect and understanding that may well lead to better treatments and novel approaches."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/7663333.stm

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Common fibre a 'true superfood'

A fibre found in most fruit and vegetables may help ward off cancer, experts believe.

An ongoing study by the Institute of Food Research suggested pectin, a fibre found in everything from potato to plums, helped to fight the disease.

Lead researcher Professor Vic Morris said the likely effect of the fibre meant there was no need for people to rely on so-called superfoods.

Foods such as blueberries and spinach have been linked to a host of benefits.

But Professor Morris said it was probably better to eat a wide range of fruit and vegetables.

> **There are still not enough people getting their five-a-day intake**
> Spokeswoman for the British Nutrition Foundation

He has been leading research on pectin with lab work using hi-tech microscopes suggesting the fibre inhibits a cancer-causing protein called Gal3.

He is still carrying out more research into this area, but said there was enough evidence to point to cancer-protecting properties in many types of fruit and vegetables.

The amount of pectin in fruit and vegetables varies with apples and oranges having particularly high amounts and strawberries and grapes low.

But Professor Morris said: "We hear so much about 'superfoods' like blueberries, but for a combination of different effects it may be better to eat a wide variety of fruit and vegetables.

"I am not saying don't eat superfoods, but just make sure you eat others as well."

'Boom in sales'

It comes after a boom in sales of superfoods in recent years.

Data collected by market analyst AC Nielsen found that sales of blueberries rose by 132% in the past two years.

A spokeswoman for the British Nutrition Foundation said: "It is very hard to know just what the effect of superfoods is as the evidence is not really available.

"But certainly we should not be focussing on these types and ignoring other fruit and vegetables. There are still not enough people getting their five-a-day intake."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/7663962.stm

Published: 2008/10/11 23:17:50 GMT

Einstein's Relativity Survives Neutrino Test

Physicist Stuart Mufson. (Credit: Image courtesy of Indiana University)

ScienceDaily (Oct. 17, 2008) — Physicists working to disprove "Lorentz invariance" -- Einstein's prediction that matter and massless particles will behave the same no matter how they're turned or how fast they go -- won't get that satisfaction from muon neutrinos, at least for the time being, says a consortium of scientists.

The test of Lorentz invariance, conducted by MINOS Experiment scientists and reported in the Oct. 10 issue of Physical Review Letters, started with a stream of muon neutrinos produced at Fermilab particle accelerator, near Chicago, and ended with a neutrino detector 750 meters away and 103 meters below ground. As the Earth does its daily rotation, the neutrino beam rotates too.

"If there's a field out there that can cause violations of Lorentz invariance, we should be able to see its effects as the beam rotates in space," said Indiana University Bloomington astrophysicist Stuart Mufson, a project leader. "But we did not. Einsteinian relativity lives to see another day."

Mufson is quick to point out that the Physical Review Letters report does not disprove the existence of a Lorentz-violating field. Despite the sophistication and power of MINOS's detector, "It may be that the field's effects are so exceedingly small that you'd need extraordinary tools to detect it," Mufson said.

Mufson is a member of the MINOS Experiment, an international consortium of physicists dedicated to studying the mysterious properties of neutrinos, particularly their wave-like oscillations. MINOS stands for Main Injector Neutrino Oscillation Search. MINOS scientists utilize the facilities at Fermilab to create a neutrino beam. The neutrinos are aimed at two detectors: one at Fermilab (the near detector) and another in the Soudan Mine in northern Minnesota (the far detector).

To produce the neutrinos, the MINOS scientists point a proton beam at a carbon target. The interaction causes a spray of pions (or pi mesons, a type of subatomic particle), some of which decay into muon

neutrinos in the direction of the detector. Neutrinos travel at close to the speed of light, are unaffected by gravitational and magnetic fields, and because of their peculiar properties, can travel right through the crust of the Earth unaffected.

The notion of a Lorentz-violating field has become popular among theoretical physicists. Known physical rules do not do a very good job of explaining the cataclysmically chaotic moments immediately following the Big Bang, so some physicists are developing new theories to sort out the mess. The possibility that some of these new theories violate relativity was proposed by Mufson colleague Alan Kostelecky, distinguished professor of physics at IU Bloomington. Kostelecky provided some advice to MINOS scientists for the present report.

Kostelecky's "Standard-Model Extension" describes the most general possible Lorentz-violating fields that could arise in the universe's beginnings and also ties together Einstein's relativity rules and post-Einsteinian quantum mechanics.

One of the implications of Kostelecky's ideas is that the Lorentz-violating field could have been very strong during the mind-numbingly brief first moments of our universe. Now that the universe has expanded to considerable size, however, the strength of the Lorentz violating field may be severely reduced, making its existence hard to detect, if it is, indeed, actually there.

"Every experiment so far has not found violations of Lorentz invariance," Mufson said. "That doesn't mean we'll stop looking. We knew the MINOS Experiment presented a new way of seeking out violations, and in a difference place. We do things that are simple and look for something profound."

Mufson says major credit for the research is owed to Brian Rebel, an IU Bloomington Ph.D. graduate who is now a postdoctoral fellow at Fermilab, in Batavia, Ill. Other IU Bloomington contributors include Robert Armstrong, Chuck Bower, Masaki Ishitsuka, Mark Messier, Jim Musser, Jon Paley and Jon Urheim.

The research was funded by the U.S. Department of Energy's Office of Science, the National Science Foundation, the Science & Technology Facilities Council (U.K.), the State and University of Minnesota, the University of Athens (Greece), and A Fundação de Amparo à Pesquisa do Estado de São Paulo and O Conselho Nacional de Desenvolvimento Científico e Tecnológico (Brazil).

Fermilab (Fermi National Accelerator Laboratory) is run by the U.S. Department of Energy in conjunction with the Fermi Research Alliance.

Adapted from materials provided by Indiana University.
http://www.sciencedaily.com:80/releases/2008/10/081015144155.htm

Portable Imaging System Will Help Maximize Public Health Response To Natural Disasters

GTRI researchers Gary Gray (left) and David Price (right) insert a USB drive loaded with mission parameters into an imaging system they developed to estimate the number of refugees after a natural disaster and assess the need for health and humanitarian services. (Credit: Georgia Tech Photo: Gary Meek)

ScienceDaily (Oct. 17, 2008) — Researchers at the Georgia Tech Research Institute (GTRI) have developed a low-cost, high-resolution imaging system that can be attached to a helicopter to create a complete and detailed picture of an area devastated by a hurricane or other natural disaster. The resulting visual information can be used to estimate the number of storm refugees and assess the need for health and humanitarian services.

Aid organizations currently don't have a quick and accurate way to determine how many people need assistance. Satellites can collect images of areas affected by a natural disaster, but there are dissemination restrictions and cloud cover can prevent collection of images.

"Without a real-time map, it's very hard to do population estimates and demographic estimates to figure out where people are, how they're moving, how they're spaced out and even how many people you have on the ground," said Benjamin Sklaver, a project officer from the Centers for Disease Control and Prevention (CDC) International Emergency and Refugee Health Branch. "This technology does not exist currently, so GTRI's imaging system is really an innovative project."

The imaging system was developed with funding from the CDC, and agency officials would like to begin using this device as soon as possible. After responding to the recent devastation caused by Hurricanes Hanna and Ike, the CDC asked GTRI to accelerate delivery of the imaging device for use during the 2008 hurricane season.

"We plan to package the system for use on Coast Guard UH-60J Black Hawk helicopters, which were among the first to fly over Haiti following Hanna's devastation," said David Price, a GTRI senior research technologist.

The imaging system – designed by Price and senior research engineer Gary Gray – is called the "Mini ModPOD," which stands for "Miniature Modular Photographic Observation Device." It consists of an off-the-shelf Canon Digital Rebel XTi digital camera, a global positioning system receiver, a small circuit board that uploads mission parameters, and an inertial measurement unit that measures the aircraft's rate of acceleration and changes in rotational attributes, including pitch, roll and yaw. The images collected from the system can be stitched together to create a complete picture of the affected area.

The research team has tested the device on several flights, selecting areas with large populations of people likely to be outdoors.

"During the first test flight, we wanted to test the clarity and resolution of the images collected during the run, and we were very pleased," said Price. "We could see tennis balls on the ground and people reading books at outdoor tables. This was sufficient detail to allow accurate counting the number of people in an area."

After the first flight, the researchers reduced the weight of the device and developed a more accurate geo-referencing capability, which allowed the physical location of the scenes shown in each photograph to be determined with precision. With the modifications made, the researchers went for a second flight test in July.

The research group selected a rectangular zone of interest and loaded the latitude and longitude coordinates of the zone into the system from a USB drive. As soon as the helicopter flew into the zone, the camera began snapping pictures. The electronics were set to measure the speed of the aircraft so that each photo overlapped 60 percent of the preceding photo, making it easier to stitch together the photos to create a complete picture. The pilot made two passes, at altitudes of 500 and 1,000 feet above ground level.

"This test flight was successful in confirming the Mini ModPOD's ability to activate the camera within the zone of interest. The resulting photos were extremely sharp and clear – they were free of any vibration or motion effects," added Price.

The photos were successfully matched to the flight data, which enabled the CDC to adjust them for geospatial reference. However, due to a software glitch, they were not overlapped as planned. The researchers made a small adjustment to the software and completed a third a third test flight in August.

"This flight resulted in images that were 60 percent overlapped, enabling CDC engineers to build a high-resolution mosaic image," noted Price. "Individuals on the ground were easily distinguishable as people separate from other objects."

The imaging system will also be available to the CDC and other agencies, such as the American Red Cross, to count people in refugee camps in order to plan for health and humanitarian services.

The research described in this article was supported by cooperative agreement #U38 EH000363 from the CDC. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the CDC.

Adapted from materials provided by Georgia Institute of Technology, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2008/10/081006112101.htm

Researchers Continue To Find Genes For Type 1 Diabetes

ScienceDaily (Oct. 17, 2008) — Genetics researchers have identified two novel gene locations that raise the risk of type 1 diabetes. As they continue to reveal pieces of the complicated genetic puzzle for this disease, the researchers expect to improve predictive tests and devise preventive strategies.

"As we add to our knowledge of the biology of type 1 diabetes and better understand details of the disease's genetic risk, we will be able to develop better diagnostic tests that meaningfully predict who will develop diabetes," said study leader Hakon Hakonarson, M.D., Ph.D., director of the Center for Applied Genomics at The Children's Hospital of Philadelphia.The study appeared online Oct. 7 in Diabetes, the journal of the American Diabetes Association. Hakonarson's co-leader in the study was Constantin Polychronakos, M.D., director of Pediatric Endocrinology at McGill University in Montreal.

Type 1 diabetes, formerly called juvenile diabetes, usually begins in childhood, when the body's immune system malfunctions and destroys insulin-producing beta cells in the pancreas. Without insulin, blood sugar levels run out of control and can impair blood flow and damage the eyes, nerves and kidneys. It is second only to asthma as the most common chronic disease in American children. Patients are dependent for life on insulin injections or insulin medications.Type 1 diabetes is a complex disease, in which a variety of genes interact with each other to cause the biological events in the immune system that remove the body's control of blood sugar levels. Over the past two years, large research collaborations, including groups led by Hakonarson and Polychronakos, have used highly automated, sophisticated gene-scanning tools to pinpoint genes implicated in the disease.

Based on initial data from previous researchers, scientists in the current study refined their search in DNA samples of thousands of patients, family members and control subjects from Philadelphia, other parts of North America, Canada, Europe and Australia. The genotyping work identified two new gene locations associated with type 1 diabetes.The genes at those locations, UBASH2A, on chromosome 21, and BACH2, on chromosome 6, are active in immune cells that play key roles in autoimmune disorders such as type 1 diabetes. "Much work remains to be done to discover exactly how these genes may function in molecular pathways involved in diabetes, but the genes are apparently biologically relevant to the disease," said Hakonarson.

Hakonarson expects that increasingly advanced genotyping technology will reveal the remaining undiscovered genes that contribute to type 1 diabetes. "We believe we have captured the vast majority of common gene variants in the disease," he added. "We are now focusing on rare gene variants. As we increase the number of known genes, we will be able to develop better diagnostic tests. Furthermore, as we better understand the gene pathways that give rise to type 1 diabetes, this knowledge may suggest ways to intervene early in life with therapies that target those pathways and prevent the disease from developing."

Funding support for the project came from The Children's Hospital of Philadelphia, the Juvenile Diabetes Research Foundation International, Genome Canada (through the Ontario Genomics Institute), the National Institutes of Health and the Cotswold Foundation. In addition to his position at Children's Hospital, Hakonarson also is on the faculty of the University of Pennsylvania School of Medicine, as are many of his co-authors. Other co-authors collaborated from several Canadian hospitals and research institutions.

Adapted from materials provided by Children's Hospital of Philadelphia, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2008/10/081014114844.htm

Researchers Continue To Find Genes For Type 1 Diabetes

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http://www.sciencedaily.com/releases/2008/10/081014114844.htm

Formoterol For Asthma: Evidence Of Serious Adverse Effects

ScienceDaily (Oct. 17, 2008) — Asthma sufferers who regularly take the beta2-agonist formoterol are more likely to suffer non-fatal serious adverse events than those given placebos. A review carried out by Cochrane Researchers showed a significantly increased risk for people who took the drug once or twice daily for at least 12 weeks.

Long-acting beta2-agonists are inhaled to help open the airways and last for 12 hours or more, but their long-term use is controversial. Recent research has cast doubt on the safety of salmeterol. Now researchers are calling into question the safety of the related drug formoterol.

"Our findings are similar to those of a review published earlier this year, which found that regular salmeterol causes an increase in non-fatal adverse events," says lead researcher of both studies, Christopher Cates, who works in Community Health Sciences at St George's, London.

22 studies involving 8,032 people diagnosed with asthma were included in the latest review. In those studies that compared formoterol to a placebo, 16 patients per thousand taking formoterol suffered serious adverse effects, whilst only 10 per thousand taking placebos were similarly affected. Serious adverse effects were most commonly asthma–related. The increase in adverse events was more marked in younger patients.

"It is possible that children are at a higher risk of suffering serious effects due to this drug, but we can't say for sure. We would urge that all serious adverse events are more fully reported in medical journals so that we can make a better assessment of drug safety," says Cates.

Adapted from materials provided by Wiley-Blackwell, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2008/10/081007192437.htm

Study Looks At The Lives Of Boys Who Commit Dating Violence

ScienceDaily (Oct. 17, 2008) — A new study sheds light on the lives of teenage boys who abuse their girlfriends. In their own words, the young men often describe facing challenges such as growing up with troubled family lives, having little or no support when they began to fail at school, and witnessing violence in their own homes and communities.

The study advocates broadening the view of abusive behaviors within dating relationships to explore the myriad environments — school, home and community — that affect boys' lives and actions.

"Until now, we did not have much information on young men who hurt their partners," said Elizabeth Miller, the study's senior author and an assistant professor of pediatrics at UC Davis Children's Hospital. "This is a critically important piece of the puzzle in terms of designing meaningful prevention and intervention programs to prevent adolescent relationship violence."

The study is the first qualitative study to document the social and environmental factors experienced by adolescent males who have abused dating partners.

Despite multiple studies on the consequences of dating violence for girls, Miller said researchers still lack an understanding of the fundamental social and environmental factors that promote male violence within dating relationships — information that is crucial to guiding its prevention.

"While less is known about what leads to male violence within dating relationships, existing studies have often pointed to individual characteristics of males, such as substance abuse or having traditional attitudes towards women," said Elizabeth Reed, the study's lead author and a graduate student at Harvard University at the time the research was conducted. "However, we need to also conduct research that considers aspects of environments — such as family life, school, peer environment and communities — that might promote such characteristics among boys. Violence in dating affects certain groups of boys more than others. We need to look beyond individuals to see how environments play a role in this important public health problem, and address the issue in a way that considers factors much larger than individual choices and behaviors."

For the study, Miller and Reed conducted in-depth interviews with 19 boys, ages 14 to 20, with known histories of perpetrating intimate partner violence and who lived in mostly urban neighborhoods in metropolitan Boston, where Miller worked before moving to Sacramento, Calif., two years ago. The researchers identified common themes — from listening to boys who had been referred by their schools or families to an intervention program for abusive behavior with girlfriends. They also gathered information from their previous work. In 2007, Miller and her colleagues completed a survey of 825 Boston-area youth that was designed to assess the prevalence of and factors related to teen dating violence among those who utilize confidential adolescent health clinics. The current study was part of this larger research project on adolescent relationship violence and health.

For the interview-based study, researchers identified common themes — from listening to boys who had been referred by their schools or families to an intervention program for abusive behavior with girlfriends.

"The themes that often came up in interviews included problematic home environments, inadequate support at school, community contexts characterized by violence and peer interactions that encourage the sexual maltreatment of girls," said Reed, who is now a postdoctoral fellow at Duke University in Durham, N.C. "The findings of our study suggest that it will not be effective to focus on the influence of one of these contexts alone. We need to understand the complex interplay of how they influence boys' behavior within intimate relationships. Intervention programs that aim to address boys' abusive behaviors toward

their girlfriends may be more effective if they also address a broad array of difficulties faced within boys' lives. However, we need more research on this topic to know for sure."

Miller and Reed said that the study is from an urban sample of boys in programs for dating violence perpetration and, therefore, does not represent all boys who perpetrate abusive behaviors toward girlfriends. However, it offers some important, initial insights into the life contexts of boys that may contribute to dating violence.

"Many intervention studies have assumed that talking to students in schools about dating violence will do the trick," Miller explained. "It's not that simple. We really need to do meaningful prevention that addresses the failures of the structures and systems in place that are supposed to support these boys. For example, the lack of positive mentorship and support at home and in school are key factors. Given staggering high school drop-out rates, school-based programs cannot reach those males who have already dropped out of school."

Miller is conducting a research study on a dating violence prevention program called Coaching Boys into Men, sponsored by the Family Violence Prevention Fund. The program trains coaches to work with high school-aged athletes to stop violence against women and girls. In addition to the research study, Miller is establishing a Sacramento-based Coaching Boys into Men program.

Miller also continues to support young women through a dating violence intervention program based in Planned Parenthood clinics and funded by the National Institutes of Health. Through the program, family planning counselors in Northern California will be trained to talk to patients about how intimate partner violence may be affecting their reproductive and sexual health.

"We need to design dating violence prevention programs that meet these young men and women where they are and that speak directly to their needs — emotionally, socially, academically — and literally at the places where they hang out. That might be on a sports field or in a Planned Parenthood clinic," Miller said.

Journal reference:

1. . **The Social and Emotional Contexts of Adolescent and Young Adult Male Perpetrators of Intimate Partner Violence: A Qualitative Study**. *American Journal of Men's Health*, September, 2008

Adapted from materials provided by University of California - Davis - Health System.

http://www.sciencedaily.com/releases/2008/10/081014204448.htm

Global Warming Threatens Australia's Iconic Kangaroos

Kangaroo. Sn increase in average temperature of only two degrees Celsius could have a devastating effect on populations of Australia's iconic kangaroos. (Credit: iStockphoto)

ScienceDaily (Oct. 16, 2008) — As concerns about the effects of global warming continue to mount, a new study published in the December issue of Physiological and Biochemical Zoology finds that an increase in average temperature of only two degrees Celsius could have a devastating effect on populations of Australia's iconic kangaroos.

"Our study provides evidence that climate change has the capacity to cause large-scale range contractions, and the possible extinction of one macropodid (kangaroo) species in northern Australia," write study authors Euan G. Ritchie and Elizabeth E. Bolitho of James Cook University in Australia.

Ritchie and Bolitho used computer modeling and three years of field observations to predict how temperature changes that are considered to be likely over the next half-century might affect four species of kangaroos. They found that a temperature increase as small as a half-degree Celsius may shrink kangaroos' geographic ranges. An increase of two degrees may shrink kangaroos' ranges by 48 percent. A six-degree increase might shrink ranges by 96 percent.

Ritchie says that generally accepted climate models predict temperatures in northern Australia to be between 0.4 and two degrees warmer by 2030, and between two and six degrees warmer by 2070.

The most significant effects of climate change are not necessarily on the animals themselves, but on their habitats—specifically, in amounts of available water. This is particularly true in Northern Australia, says Ritchie.

"If dry seasons are to become hotter and rainfall events more unpredictable, habitats may become depleted of available pasture for grazing and waterholes may dry up," the authors write. "This may result in starvation and failed reproduction … or possible death due to dehydration for those species that are less mobile."

And although kangaroo species may be mobile enough to relocate as the climate changes, the vegetation and topography for which they are adapted are unlikely to shift at the same pace.

The antilopine wallaroo, a kangaroo species adapted for a wet, tropical climate, faces the greatest potential risk. Ritchie and Bolitho found that a two-degree temperature increase may shrink its range by 89 percent. A six-degree increase may lead to the extinction of antilopine wallaroos if they are unable to adapt to the arid grassland that such a temperature change is likely to produce.

"Large macropodids are highly valuable economically, through both ecotourism and a commercial meat trade, and many species are an important food source for indigenous people," they write. "Therefore, it is critically important that we understand the ecology of Australia's native herbivores to ensure any further economic development will occur in an environmentally sustainable way."

The paper appears in an issue of Physiological and Biochemical Zoology on the focused topic "Predicting Extinction: Investigating the Interface of Physiology, Ecology, and Climate Change."

Adapted from materials provided by University of Chicago Press Journals.

http://www.sciencedaily.com:80/releases/2008/10/081015120734.htm

Get Moving: New Research Shows Early Mobility Better Than Bed Rest For ICU Patients

ScienceDaily (Oct. 16, 2008) — A critical care specialist at Johns Hopkins who has reviewed recent studies of intensive care unit (ICU) patients and data from The Johns Hopkins Hospital concludes that the routine use of deep sedation and bed rest in ICU patients may be causing unnecessary and long-term physical impairment and poor quality of life after hospital discharge.

"The benefits of getting hospitalized patients out of bed and moving were understood during World War II with battlefield injuries," says Dale Needham, M.D., Ph.D., assistant professor in the Division of Pulmonary and Critical Care Medicine and Department of Physical Medicine and Rehabilitation at the Johns Hopkins University School of Medicine. "My review shows it may be time to go back to the future. It's becoming clear that the safety and benefits of early mobilization are real and that it's better to get moving sooner rather than later."

In a report, published in the Oct. 8 issue of Journal of the American Medical Association (JAMA), Needham says that routinely keeping ICU patients deeply sedated and on bed rest can lead to muscle weakness and that it's probably best to get patients up and moving shortly after admission to an ICU. The conclusions are based on Needham's review of recent studies and experience at The Johns Hopkins Hospital medical intensive care unit.

A systematic review by Needham and colleagues found that across 24 studies, focused on ICU patients with sepsis, prolonged mechanical ventilation and multiple organ failure, 46 percent of 1,421 patients had neuromuscular dysfunction that was associated with extended use of mechanical ventilation and longer stays in the ICU. Other studies Needham reviewed showed that early physical medicine and rehabilitation therapy, while patients are on life support in the ICU, can safely allow patients to get out of bed and walk more quickly, resulting in shorter time on a ventilator and a shorter stay in the ICU for these critically ill patients.

Needham also based his comments on experience with patients at The Johns Hopkins Hospital medical intensive care unit, where a new physical medicine and rehabilitation program has been developed for ICU patients.

According to Needham, early mobilization of hospitalized patients was introduced in World War II as a means of getting injured soldiers quickly back to the battlefield. This practice was popularized by related editorials at that time, such as one titled "The Evil Sequelae of Complete Bed Rest." Even during the early years after creation of ICUs, patients were frequently awake and out of bed. Over time, however, technology and other factors led to the more routine use of deep sedation and bed rest in ICUs. Needham, in his review, cited numerous studies highlighting the physical harm of lengthy bed rest, such as loss of muscle strength and changes in heart function.

The cause of muscle weakness after an ICU stay are complicated, he says, but experimental studies do show that even healthy people experience a 4 percent to 5 percent loss of muscle strength for each week of bed rest, and require a prolonged recovery period. "Although there are many causes of muscle weakness, getting ICU patients up and moving does help modify the negative effects of bed rest," he says.

In the JAMA report, Needham offered one example of the benefits of early mobility in the case of a 56-year-old man with severe lung disease admitted to Johns Hopkins with new kidney failure. The patient, who had a two-month stay in the medical ICU, was almost immediately put on a program of walking laps around the ICU with accompanying ICU and rehabilitation staff, while on a ventilator with a breathing tube in his mouth. Seven months later, after further rehabilitation in a special facility, the patient reported that his muscle strength and physical function continued to improve.

Needham cautions that despite this evidence for early mobilization, additional research is needed to more fully understand the best methods for doing it, and the short-term and long-term benefits.

Funding support for Needham was provided by the National Institute of Health and the Canadian Institutes of Health Research.

Adapted from materials provided by Johns Hopkins Medical Institutions, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2008/10/081007172826.htm

Colossal Black Holes Common In Early Universe, Spectacular Galactic Collision Suggests

Artist's conception of the 4C60.07 system of colliding galaxies. The galaxy on the left has turned most of its gas into stars, and the black hole in its center is ejecting charged particles in the two immense jets shown. The galaxy on the right also has a black hole causing the galaxy's central region to shine, but much of its light is hidden by surrounding gas and dust. Vast numbers of stars are forming out of the gas and dust, and some of the material is being pulled away from the galaxy. (Credit: David A. Hardy/UK ATC)

ScienceDaily (Oct. 16, 2008) — Astronomers think that many - perhaps all - galaxies in the universe contain massive black holes at their centers. New observations with the Submillimeter Array now suggest that such colossal black holes were common even 12 billion years ago, when the universe was only 1.7 billion years old and galaxies were just beginning to form.

The new conclusion comes from the discovery of two distant galaxies, both with black holes at their heart, which are involved in a spectacular collision.

4C60.07, the first of the galaxies to be discovered, came to astronomers' attention because of its bright radio emission. This radio signal is one telltale sign of a quasar - a rapidly spinning black hole that is feeding on its home galaxy.

When 4C60.07 was first studied, astronomers thought that hydrogen gas surrounding the black hole was undergoing a burst of star formation, forming stars at a remarkable rate - the equivalent of 5,000 suns every year. This vigorous activity was revealed by the infrared glow from smoky debris left over when the largest stars rapidly died.

The latest research, exploiting the keen vision of the Submillimeter Array of eight radio antennas located in Hawaii, revealed a surprise. 4C60.07 is not forming stars after all. Indeed, its stars appear to be relatively old and quiescent. Instead, prodigious star formation is taking place in a previously unseen companion galaxy, rich in gas and deeply enshrouded in dust, which also has a colossal black hole at its center.

"This new image reveals two galaxies where we only expected to find one," said Rob Ivison (UK Astronomy Technology Centre), lead author of the study that will be published in the Monthly Notices of the Royal Astronomical Society. "Remarkably, both galaxies contain supermassive black holes at their centers, each capable of powering a billion, billion, billion light bulbs. The implications are wide-reaching: you can't help wondering how many other colossal black holes may be lurking unseen in the distant universe."

Due to the finite speed of light, we see the two galaxies as they existed in the distant past, less than 2 billion years after the Big Bang. The new image from the Submillimeter Array captures the moment when 4C60.07 ripped a stream of material from its neighboring galaxy, as shown in the accompanying artist's conception. By now the galaxies have merged to create a football-shaped elliptical galaxy. Their black holes are likely to have merged and formed a single, more massive black hole.

The galaxies themselves show surprising differences. One is a dead system that has formed all of its stars already and used up its gaseous fuel. The second galaxy is still alive and well, holding plenty of dust and gas that can form new stars.

"These two galaxies are fraternal twins. Both are about the size of the Milky Way, but each one is unique," said Steve Willner of the Harvard-Smithsonian Center for Astrophysics, a co-author of the paper.

"The superb resolution of the Submillimeter Array was key to our discovery," he added.

Adapted from materials provided by Harvard-Smithsonian Center for Astrophysics.

http://www.sciencedaily.com/releases/2008/10/081016124331.htm

Gene Therapy Restores Vision To Mice With Retinal Degeneration

ScienceDaily (Oct. 16, 2008) — Massachusetts General Hospital (MGH) researchers have used gene therapy to restore useful vision to mice with degeneration of the light-sensing retinal rods and cones, a common cause of human blindness.

Their report, appearing in the Oct. 14 Proceedings of the National Academy of Sciences, describes the effects of broadly expressing a light-sensitive protein in other neuronal cells found throughout the retina.

"This is a proof of principle that someday we may be able to repair blindness in people with conditions like retinitis pigmentosa and macular degeneration," says Richard Masland, PhD, director of the Cellular Neurobiology Laboratory in the MGH Department of Neurosurgery. "There are several limitations we need to overcome before we can begin clinical trials, but I'm optimistic that this work may someday make a big difference for people who otherwise would have no vision at all."

The study was designed to investigate the effect of expressing the light-sensitive protein melanopsin in retinal ganglion cells. These specialized neurons receive light signals from the rods and cones and carry those signals into the brain via the optic nerve, which is formed from the cells' axons. Melanopsin is usually produced in a subset of cells that are involved with establishing circadian rhythms but not with vision. The MGH team used the standard viral vector adeno-associated virus to deliver the gene encoding melanopsin throughout the retinas of mice whose rod and cone photoreceptors had degenerated from lack of a crucial protein.Four weeks after delivery of the gene, melanopsin – normally produced in 1 percent of retinal ganglion cells – was found in about 10 percent of ganglion cells in the treated eyes but not in eyes that received a sham injection. Many of the melanopsin-expressing cells were structurally different from those that typically produce the protein, implying that it was being expressed in a broader range of retinal ganglion cells. Electrophysiological examination of the melanopsin-expressing cells revealed that all responded to light, although the neuronal signal was delayed and persisted after the light signal had stopped, which is typical for a melanopsin-mediated signal. Two behavioral tests verified that the treated mice – which otherwise would have been essentially blind – had enough vision to find a darkened refuge in an otherwise brightly-lit area and to successfully learn that a light indicated a safe platform to which they could swim.

"The same level of melanopsin expression in a human retina might allow someone who otherwise would be totally blind to read newspaper headlines, but the slowness of the response would be a problem," Masland says. He notes that another group's gene therapy experiments published earlier this year were similar but used a protein that requires a level of light comparable to looking directly into a bright sky for a whole day, which would eventually damage the retina. "Before planning clinical trials, we need to develop a more sensitive version of the other protein, channelrhodopsin-2, or a faster-responding melanopsin, which we are working on."

Masland is the Charles A. Pappas Professor of Neuroscience at Harvard Medical School. He and the MGH have applied for a patent related to the work of this study, which was supported by grants from the National Institutes of Health and Research to Prevent Blindness. The lead author of the paper is Bin Lin, PhD, MGH Cellular Neurobiology Laboratory. Additional co-authors are Amane Koizumi, MD, formerly of MGH and now at the National Institute for Physiological Science in Japan; and Nobushige Tanaka, MD, and Satchidananda Panda, PhD, of the Salk Institute for Biological Studies.

Adapted from materials provided by Massachusetts General Hospital, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2008/10/081016124250.htm

Volcanoes May Have Provided Sparks Of First Life

Scripps professor of marine chemistry Jeff Bada produces an electrical stark in an experimental apparatus to show how the atmospheric conditions during volcanic eruptions may have led to early life on Earth. (Credit: Scripps Institution of Oceanography, UC San Diego)

ScienceDaily (Oct. 16, 2008) — New research suggests that lightening and volcanoes may have sparked early life on Earth. Researcher Jeffrey Bada at Scripps Institution of Oceanography at UC San Diego and colleagues reanalyzed Stanley Miller's classic origin of life experiment, offering a new analysis on how the essential building blocks of life may have arose from volcanic eruptions.

Bada, Scripps professor of marine chemistry and graduate student of Miller's in the Chemistry Department at the UC San Diego in 1960, preserved Miller's original chemical samples. Bada along with lead author Adam Johnson, Indiana University graduate student and colleagues, reanalyzed the samples to determine if new chemical compounds could be detecting using modern equipment. The paper, "The Miller Volcanic Spark Experiment," is published in the Oct. 17 issue of the journal Science.

"We believed there was more to be learned from Miller's original experiment," said Bada, co-author in the paper. "We found that a modern day version of the volcanic apparatus produces a wider variety of compounds."

Miller's classic "primordial soup" experiment, published in Science in 1953, is still widely used today in high school chemistry labs to mimic chemical reactions that occur in vapor-rich volcanic eruptions. The experiment circulated methane, ammonia, water vapor and hydrogen in a closed experiment, simulating the earth's early atmosphere and sent a lightning-like spark through it. Over a series of days, organic compounds formed in the mixture, demonstrating how Earth's primitive atmosphere may have given rise to life.

It is commonly thought that early Earth was comprised of many small volcanic islands. This study suggests that lightning and the release of gases associated with these volcanic eruptions could have produced the necessary chemical components to give rise to early life.

Bada's lab is the first to perform follow up studies using Miller's original apparatus and chemicals samples, which were discovered following Miller's death in 2007. Researchers reanalyzed 11 of the original samples using contemporary analytical chemistry techniques and produced 22 amino acids, the building blocks of proteins, 10 of which had not been identified previously by Miller.

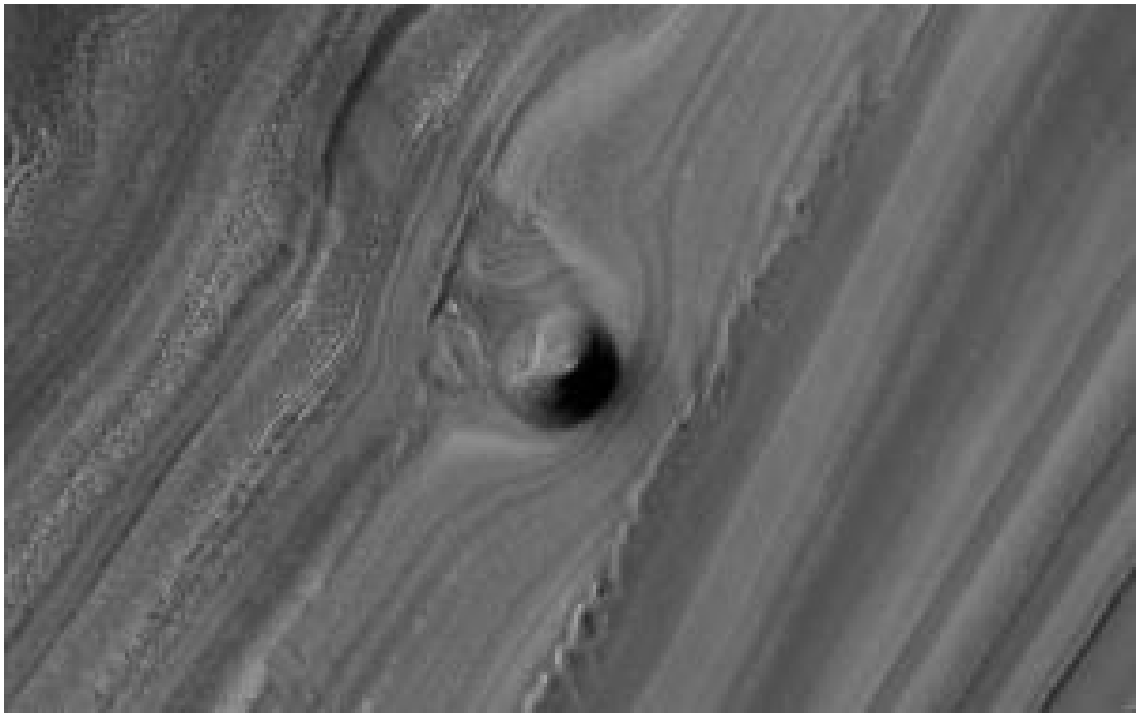
"Historically, you don't get many experiments that might be more famous than these; they redefined our thoughts on the origin of life and showed unequivocally that the fundamental building blocks of life could be derived from natural processes," said lead author Adam Johnson, a Indiana University graduate student with the NASA Astrobiology Institute team.

Henderson Cleaves (Carnegie Institution for Science), Jason Dworkin and Daniel Glavin (Scripps Institution of Oceanography) and Antonio Lazcano (Universidad Nacional Autonoma de Mexico) also contributed to the report. It was funded with grants from the NASA Astrobiology Institute, the Marine Biological Laboratory in Woods Hole, Mass., and Mexico's El Consejo Nacional de Ciencia y Tecnologia.

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

http://www.sciencedaily.com/releases/2008/10/081016141405.htm

HiRISE Camera Reveals Rare Polar Martian Impact Craters



The UA's HiRISE camera on NASA's Mars Reconnaissance Orbiter found this odd, solitary hill part-way down an exposed section of Mars' north polar layered deposits. The 40-meter (130-foot) high conical mound is likely the remnant of a buried impact crater, UA planetary scientist Shane Byrne said. (Credit: NASA/JPL-Calech/University of Arizona)

ScienceDaily (Oct. 16, 2008) — An odd, solitary hill rising part-way down an eroding slope in Mars' north polar layered terrain may be the remnant of a buried impact crater, suggests a University of Arizona planetary scientist who studied the feature in a new, detailed image from the HiRISE camera onboard NASA's Mars Reconnaissance Orbiter.

HiRISE, or the High Resolution Imaging Science Experiment, headed by Alfred McEwen of the Lunar and Planetary Laboratory, is based at the UA. New HiRISE images are posted weekly on the team's Web site.

The north polar layered deposits are stacked up to several kilometers thick and represent one of the largest surface reservoirs of Martian water that interacts with the planet's atmosphere, said LPL's Shane Byrne. Scientists believe the deposits record orbitally driven climate changes and study them to learn how Mars climate evolved.

The new HiRISE image shows an exposed 500-meter thick section (1,640 feet) of this layering, and also a 40-meter high (130-foot) conical mound sticking out of the slope.

"The mound may be the remnant of a buried impact crater, which is now being exhumed," Byrne said.

Impact craters would have been buried by ice as the layered deposits accumulated, with layers wrapping around the crater, Byrne said. Almost none exist on the surface of this terrain.

"But in this rare case, erosion formed a trough that uncovered one of these structures. For reasons that are poorly understood right now, the ice beneath the site of the crater is more resistant to this erosion, so that as this trough formed, ice beneath the old impact site remained, forming this isolated hill."

Viewing the HiRISE image at full resolution shows that the mound is made up of polygonal blocks as big as 10 meters, or 33 feet, across, he added. The blocks are covered with reddish dust, but otherwise resemble ice-rich blocks seen in other images of the north polar layered deposits.

The seven new HiRISE images released today include another image of an impact crater where such features are rarely seen – on the north polar cap. HiRISE turned up a small crater, only about 115 meters, or 125 yards, in diameter on the surface of Planum Boreum, popularly known as the north polar cap.

The dearth of craters has led scientists to suggest that either the north polar cap is only about 100,000 years old or that crater impacts into the ice disappear as the ice relaxes, just as imperfections disappear as old window glass relaxes.

Color in the enhanced-color version of the Planum Boreum impact crater comes from dust and from ice of various grain sizes. Blueish ice has a larger grain size than the ice that has collected in the crater. Dust is reddish. A smooth area stretching away from the crater to the upper right of the image may be caused by winds around the crater or by fine-grained ice and frost blowing out of the crater, HiRISE scientists say.

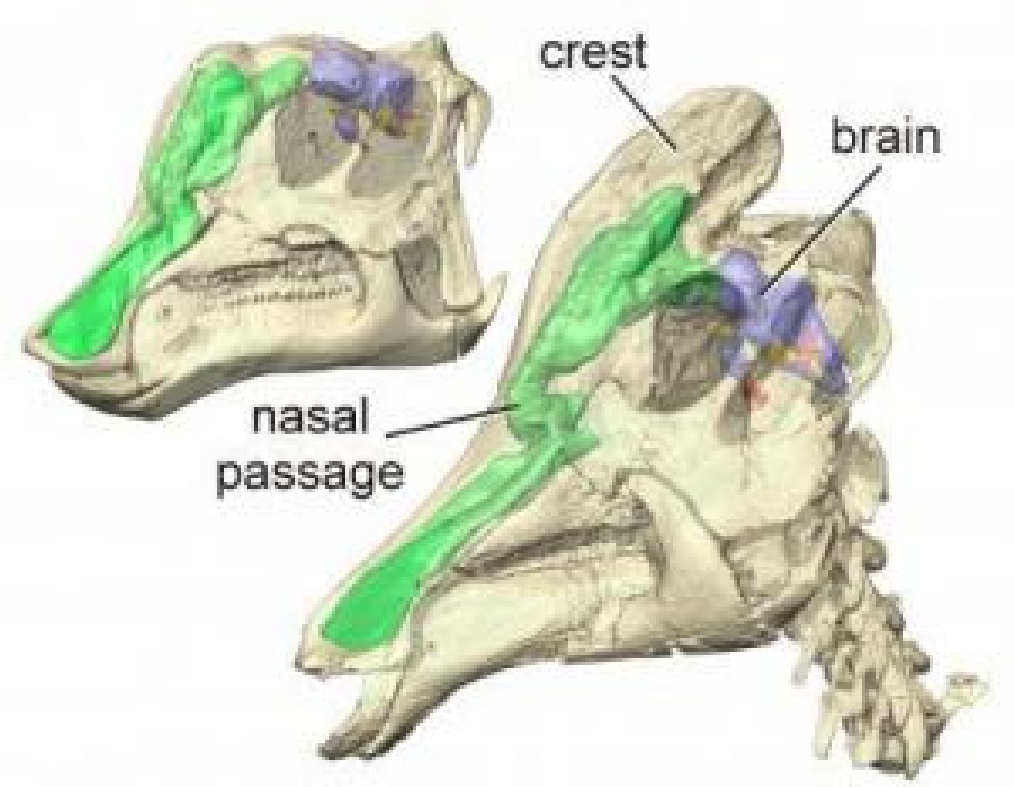
HiRISE has returned more than 8,200 gigapixel-size images of Mars' surface since the start of its science mission in November 2006. The HiRISE team so far has released a total of about 27 terabytes of data, more than all previous deep space missions combined.

The Mars Reconnaissance Orbiter is managed by the Jet Propulsion Laboratory, Pasadena, Calif., for NASA's Science Mission Directorate, Washington. Lockheed Martin Space Systems of Denver built the spacecraft. The UA operates the HiRISE camera, built by Ball Aerospace and Technology Corp. of Boulder, Colo.

Adapted from materials provided by University of Arizona. Original article written by Lori Stiles.

http://www.sciencedaily.com/releases/2008/10/081016133152.htm

Brain Structure Provides Key To Unraveling Function Of Bizarre Dinosaur Crests



Reconstructions of the skull in a juvenile and sub-adult Corythosaurus created using CT scanning. The nasal cavity is highlighted in green, and the brain appears in purple. The complicated nasal passage within the showy crest functioned as resonating chambers during vocalization. The structure of the inner ear and expanded brain confirms that duck-billed dinosaurs were capable of perhaps sophisticated behavioral communication. (Credit: Courtesy of Witmer & Ridgely, Ohio University.)

ScienceDaily (Oct. 16, 2008) — Paleontologists have long debated the function of the strange, bony crests on the heads of the duck-billed dinosaurs known as lambeosaurs. The structures contain incredibly long, convoluted nasal passages that loop up over the tops of their skulls.

Scientists at the University of Toronto, Ohio University and Montana State University now have used CT-scanning to look inside these mysterious crests and reconstruct the brains and nasal cavities of four different lambeosaur species. At the annual meeting of the Society for Vertebrate Paleontology in Cleveland, Ohio, on Oct. 16, the team will present new study findings that suggest the crests were used for communication.

"The shape of the brain can tell us a lot about what senses were important in a dinosaur's everyday life, and give insight into the function of the crests," said study lead author David Evans, a paleontologist at the Royal Ontario Museum and the University of Toronto.

Some paleontologists have suggested that the crests heightened the sense of smell by increasing the surface area of the sensory tissue. Others have argued that they regulated temperature, and still others have speculated that the crests acted as sound resonators for communication.

"It's difficult to infer the function of structures in an extinct dinosaur when there is so little resemblance to any living animal," said Jack Horner, a member of the team and paleontologist at Montana State University.

By analyzing CT scans, conducted by Lawrence Witmer and Ryan Ridgely of Ohio University's College of Osteopathic Medicine, the scientists were able to circumvent the problems of fossilization.

"Even though the soft tissues are not preserved in the fossils, the shape of the bones that encase the brain and nasal passages are," said Evans. "From there, the anatomy of these missing soft parts is easily interpreted."

The CT scan results revealed a mismatch between the external shape of the crest (which no doubt functioned as a visual display) and the internal shape of the nasal passages in closely related species, suggesting a special function for the nasal cavity. The portion of the brain responsible for the sense of smell was relatively small and primitive, indicating that the crest did not evolve to improve that sense.

Computer models done by other researchers suggest that the crests could have been used to make low, eerie bellowing calls that could have been used in communication, perhaps to call for mates or warn others of predators. The CT scans documented a delicate inner ear that confirms that the dinosaurs could hear the low-frequency calls produced by the crest.

"We were surprised to see just how large the centers of the brain associated with higher cognitive functions were," said Witmer, Chang Professor of Paleontology in Ohio University's College of Osteopathic Medicine. "We suspected that the crested duck-billed dinosaurs used both vocal and visual displays, but now we see that they had the brain power and hearing to pull off these behaviors."

When all the available information is put together, including the digital brain and ear casts, the evolutionary relationships of the species, and the growth pattern of the crest and its high degree of variability in different co-existing species, it supports the idea that the elaborate nasal cavity was likely used to produce sounds for communication. This study demonstrates the power of using an integrated approach combining 3D imaging, growth studies, and phylogenetic sampling to test ideas about the function and evolution of unusual structures in extinct animals.

The research was funded by the National Science and Engineering Research Council of Canada and the National Science Foundation. This study also will be published in part in an upcoming issue of the journal The Anatomical Record.

Adapted from materials provided by Ohio University.

http://www.sciencedaily.com/releases/2008/10/081016095141.htm

Preventing Colds: Washing Your Hands Is More Effective Than Taking Vitamins

ScienceDaily (Oct. 16, 2008) — The days are getting shorter, temperatures are dropping, and the cold and flu season is beginning. Many people have started taking vitamin C tablets as a precautionary measure. But research has shown that vitamin supplements do not provide nearly as much protection as other measures, like frequently washing your hands - and that high doses can even be harmful.

The German Institute for Quality and Efficiency in Health Care (IQWiG) has published information and a quiz on the subject of prevention, helping to separate widespread myths from facts.

Promising news is quickly assumed to be true

Many people overestimate the benefits of vitamin C and other antioxidants. For years it was believed that taking vitamin C supplements not only provided protection against colds, but also against cancer, thereby helping people to live longer. An easy-to-understand summary of the research in this area, refuting these beliefs, has now been published on IQWiG's website http://www.informedhealthonline.org.

"Not only is there no proof that some antioxidants prolong life, but there is some evidence that certain products may even lead to earlier death", says Professor Peter Sawicki, the Institute's Director.

"Positive" news gives people hope, which can quickly spread, become deeply held beliefs. Professor Sawicki: "It can be very difficult to accept that these beliefs are myths, but they are not true if further research does not confirm them or the research points to the opposite conclusion."

Simple strategies can prevent respiratory infections

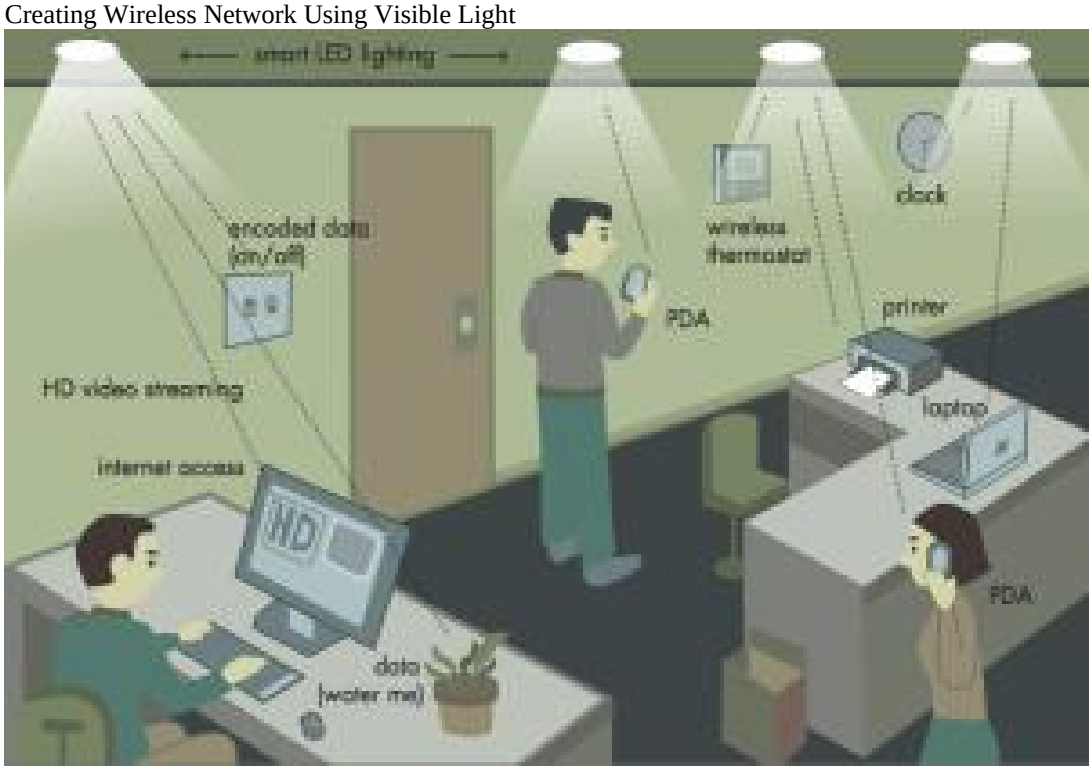
Whether it is caused by a mild cold or the flu, a runny nose and sore throat are signs of a viral infection. Many people are absolutely convinced that vitamin C provides protection against respiratory infections. Yet research has shown that vitamin C does not prevent infection, and that high doses can even be harmful.

There are many simple but effective ways to lower the risk of respiratory infections. These include frequently washing your hands with normal soap and water, and not touching your face with your hands. People who already have a respiratory infection can stop it from spreading by throwing away tissues immediately after using them and not shaking hands with other people.

Adapted from materials provided by Institute for Quality and Efficiency in Health Care.

http://www.sciencedaily.com/releases/2008/10/081009111038.htm

Creating Wireless Network Using Visible Light



Researchers expect to piggyback data communications capabilities on low-power light emitting diodes, or LEDs, to create "Smart Lighting" that would be faster and more secure than current network technology. (Credit: Image courtesy of Boston University)

ScienceDaily (Oct. 16, 2008) — Boston University's College of Engineering is a partner launching a major program, under a National Science Foundation grant, to develop the next generation of wireless communications technology based on visible light instead of radio waves.

Researchers expect to piggyback data communications capabilities on low-power light emitting diodes, or LEDs, to create "Smart Lighting" that would be faster and more secure than current network technology.

"Imagine if your computer, iPhone, TV, radio and thermostat could all communicate with you when you walked in a room just by flipping the wall light switch and without the usual cluster of wires," said BU Engineering Professor Thomas Little. "This could be done with an LED-based communications network that also provides light – all over existing power lines with low power consumption, high reliability and no electromagnetic interference. Ultimately, the system is expected to be applicable from existing illumination devices, like swapping light bulbs for LEDs."

This initiative, known as the Smart Lighting Engineering Research Center (http://smartlighting.bu.edu), is part of an $18.5 million, multi-year NSF program awarded to Boston University, Rensselaer Polytechnic Institute and the University of New Mexico to develop the optical communication technology that would make an LED light the equivalent of a WiFi access point. This innovative alternative may one day replace most of today's lighting devices.

Rensselaer and UNM will work on creating novel devices along with systems applications to better understand the proliferation of smart lighting technologies plus materials needed for wireless devices to interface with the network. Together with BU, the three partners will have 30 faculty researchers plus students, postdoctoral researchers and visiting industry engineers as regular contributors to the research conducted by the Smart Lighting ERC.

Boston University researches will focus on developing computer networking applications, notably the solid state optical technology that will form the network's backbone. Funding for the BU portion of the program is expected to total about $1 million per year for the next 10 years plus additional funding from industrial partners and possibly the formation of new businesses by entrepreneurs.

"This is a unique opportunity to create a transcendent technology that not only enables energy efficient lighting, but also creates the next generation of secure wireless communications," Little added. "As we switch from incandescent and compact florescent lighting to LEDs in the coming years, we can simultaneously build a faster and more secure communications infrastructure at a modest cost along with new and unexpected applications."

Little envisions indoor optical wireless communications systems that use white LED lighting within a room – akin to the television remote control device – to provide Internet connections to computers, personal digital assistants, television and radio reception, telephone connections and thermostat temperature control.

With widespread LED lighting, a vast network of light-based communication is possible, Little noted. A wireless device within sight of an enabled LED could send and receive data though the air – initially at speeds in the 1 to 10 megabit per second range – with each LED serving as an access point to the network. Such a network would have the potential to offer users greater bandwidth than current RF technology.

Moreover, since this white light does not penetrate opaque surfaces such as walls, there is a higher level of security, as eavesdropping is not possible. LED lights also consume far less energy than RF technology, offering the opportunity to build a communication network without added energy costs and reducing carbon emissions over the long term.

"The innovative LED-based networking research that Smart Lighting ERC is conducting has the potential to be extremely positive and disruptive to the market," said Inder Monga, Leader, Advanced Networking Research at Nortel. "Nortel believes the era of hyperconnectivity is upon us and the potential new applications that this visible light-based networking could enable with its energy efficient qualities, privacy and its ubiquitous nature is very exciting."

The ability to rapidly turn LED lights on and off – so fast the change is imperceptible to the human eye – is key to the technology. Flickering light in patterns enables data transmission without any noticeable change in room lighting. And the technology is not limited to indoor lights; its first real test may very well come outdoors, in the automotive industry.

"This technology has many implications for automobile safety," Little said. "Brake lights already use LEDs, so it's not a stretch to outfit an automobile with a sensor that detects the brake lights of the car in front of it and either alerts an inattentive driver or actively slows the car."

Adapted from materials provided by Boston University.

http://www.sciencedaily.com/releases/2008/10/081015144137.htm

Antique Muses Stir a Modern Orpheus

By JORI FINKEL

Walla Walla, Wash.

WITH its grand marble staircase, inner and outer peristyles and Roman gardens, the Getty Villa in Los Angeles seems a fitting backdrop for a small army of Greek gods, Roman warriors and Etruscan vases. But in two weeks visitors to the villa, which houses the antiquities collection of the J. Paul Getty Museum, will encounter a sculpture from a very different time and place.

With a nod to classical themes, the sculpture represents the head of a poet. But this particular head — a bald one with a scratchy beard and deeply creased brow — looms large at seven feet tall. It is made out of white plaster instead of clay or stone. It is modern in scale and feel.

And for many in the art world the monumental head is recognizable. It belongs to the American artist Jim Dine, who for the last 50 years has made his name as a highly successful painter, printmaker and sculptor while more quietly (and less lucratively) honing his skills as a poet.

The self-portrait will be the centerpiece of an installation called “Jim Dine: Poet Singing (The Flowering Sheets)” that opens at the villa on Oct. 30. Mr. Dine has also written out a poem in charcoal on the gallery’s white walls and recorded it on a soundtrack that will play on a loop in the gallery.

The installation, billed as the first contemporary-art show at the villa, is something of a gamble for both the artist and the Getty. By putting his face on this project so prominently, Mr. Dine seems to be daring his critics, some of whom have dismissed his recent work as too classical or conventional, to take him on. And it is unclear how the art world will view this contemporary undertaking at the villa, which reopened in 2006 after a long renovation as the Getty’s new showcase for antiquities.

The Getty Museum's director, Michael Brand, said he saw Mr. Dine as a good fit because of the artist's interest in antiquity "and also memory, which is a major theme of the villa." He added: "We don't want the villa to become a mausoleum of old art. We want it to continue to be revitalized and reinterpreted."

Yet for Mr. Dine, who says he might destroy the site-specific piece after its run at the villa, the project also represents a chance to meditate, at the age of 73, on two of his greatest passions over the years — sculpture and poetry.

Born and schooled in Cincinnati, he got his big break in the art world after he moved to New York in 1958 and began staging so-called Happenings. In one memorable performance he wore silver paint and silver clothes to play the role of an automobile in a car crash. After that his focus returned to art objects, and his work was lumped in with that of the Pop artists. He resisted the label. "Pop Art is concerned with exteriors," he likes to say. "I'm concerned with interiors."

In effect he has taken the Pop artist's cool obsession with serial imagery — treating pop culture as a series of combinations and permutations on the same theme — and put it to more handmade, emotional, even soulful ends. Most famously he has taken the popular image of the Valentine-style heart and reworked it in numerous patterns, colors and mediums over the last 40 years. Another favorite subject has been unoccupied bathrobes, usually read as surrogate portraits of the person missing from them. The London curator Marco Livingstone has suggested that this repeated focus on certain motifs takes the place of a signature style for Mr. Dine, who is known for his versatility.

But few collectors who own a Dine heart print or bathrobe painting realize the extent of his interest in poetry. He first took to the genre when he was a teenager. "I had dyslexia, and I had difficulty reading," he said. "The only thing I could read was poetry because it was short. And it moved me always. Poetry was my prose."

Today he and his wife, the photographer Diana Michener, sit on the board of the Bowery Poetry Club in New York. He counts poets as friends. And he writes his own stuff: a sort of excitable, conversational and oblique montage in the spirit of Frank O'Hara, John Ashbery, Ron Padgett and other so-called New York School poets.

"I've been a poet my entire life — have been encouraged by these generous people, Robert Creeley, O'Hara, Ashbery, Padgett," Mr. Dine said in an interview in his studio in Walla Walla. He was rolling a lump of clay in his hands into various rings and rods (he called it "doodling") with an energy that verged on compulsive.

"Creeley came up to me once when Ted Berrigan and I gave a reading in London in the late '60s, and he said, 'But you're a poet.' It was an amazingly generous and affirming thing to say."

He has introduced his poetry into his artwork, for example exhibiting photographs of his poems at his New York gallery, PaceWildenstein. And his recent sculptures of Pinocchio show a literary bent that is out of step with trends sweeping contemporary art. But the Getty project might be his most ambitious attempt yet to bring poetry into the museum.

The project originated in 2007 with an invitation from the Getty to him to respond in some fashion to its antiquities collection. It imposed few restrictions except for the time: fall 2008. As Mr. Dine remembered it: "The Getty kept pushing me for details: What's going to be on the walls? Do we have to have frames made? When are you going to make drawings?"

"But I'd already done that," he said, referring to his 1980s drawings inspired by Greek and Roman sculptures in the Glyptotek Museum in Munich. "Instead I realized I wanted to integrate my poetry and plastic arts."

Throughout the conversation his studio was humming with activity. Two colleagues from Pace Editions in New York were peeling new Pinocchio prints off the printing plate as his assistant returned phone calls. Ms. Michener, who keeps a studio next door, was preparing lunch for the group: a salad with lettuce and beets from their garden. “It’s always busy,” Mr. Dine said. “Tat’s the way I like it.”

Looking tan and compact in a black polo shirt, khaki shorts and red Crocs, he moved from one task to the next with the athleticism of someone half his age; he had biked to work in extreme heat that morning. He said he discovered this Washington farming town in 1983, long before it became a magnet for winemakers and tasters, when the Bay Area artist Manuel Neri suggested he try the Walla Walla Foundry for fabrication. Mr. Dine began spending more and more time there, to the point where five years ago he bought a studio in town and a home on the outskirts. (A self-proclaimed wanderer, he still keeps places in New York and Paris as well.)

The Walla Walla Foundry played a big role in the Getty project, not only fabricating the individual sculptures for Mr. Dine but also giving him space in its Oregon warehouse, right across the border, to build a crude mock-up of the Getty Villa gallery. We drove to see the room, which had the same proportions as the museum although not its black terrazzo floor or oak-molding elegance.

He stood in front of that massive plaster sculpture of his own bald head, which was flanked by two female figures carved of oak. (He said he planned a total of four for the installation.) One held a lyre above her head and seemed to be lost in some ecstatic moment; the other, wrapped in a swirl of robes, appeared to be dancing. “What I really wanted to do is locate the sculptures in the space, to see if they could hold the space, to see if they worked with the poem,” he said.

He based the female figures on Greek terra-cotta sculptures dating from before 100 B.C. that he had spotted at the Getty Villa. Each of the originals stands about eight to nine inches tall. In Mr. Dine’s reimagining they stand a striking eight feet tall and weigh over 750 pounds. The foundry used a laser scanner, computer modeling software and a milling machine to make the jump in scale. Mr. Dine finished the surface by hand with a chisel, chainsaw and electric sander.

“The challenge of blowing them up this huge is that they can be very ugly,” he said, circling one of the figures. “Every little bump becomes a tumor. But I knew that blown up they were going to be beautiful.”

Once the large figures were completed, he tried painting them in bright colors “as the Greeks originally did,” giving one a red robe and the other a yellow lyre. But he decided that it looked fussy and sandblasted off the color, leaving just traces of it on the wood. “The work is more austere this way,” he said, inspecting the new patina. “And it feels to me more like something that has survived from ancient times.”

As for the monumental likeness of his head, Mr. Dine sat still long enough to let the foundry personnel scan his face. They milled a version in polystyrene foam, which Mr. Dine covered with plaster so he could shape the surface. The only major alteration, he said, is that he took his glasses off. “I didn’t want a caricature,” he said.

Over all the composition of figures echoes another work at the Getty Villa: a sculpture of a poet “in the guise of Orpheus” flanked by Sirens. Rainer Mack, the Getty education manager who oversaw the Dine installation, describes the museum piece as a homage to Orpheus’ powers as a poet. “According to mythology the Sirens have such a beautiful voice they are dangerous,” he said. “But the only one who has a more beautiful voice —the only one who can charm the Sirens, is Orpheus.”

For Mr. Dine this piece is cautionary as well as celebratory, warning us that muses and sirens are close relatives. “It’s kind of like the Hindu goddess Kali — a creative force can also be a destructive one.”

The poem written on the Getty walls, “The Flowering Sheets,” also deals with the dangerous undercurrents of inspiration. The poem appears in a limited-edition project to be published later this year by Steidl, for which Mr. Dine created a book a week, calling on his writings, paintings, photographs and more over the space of a year. (The 52 books that make up the project, called “Hot Dream,” are to go on display at PaceWildenstein in December.)

Ten stanzas long, “The Flowering Sheets” collapses time and space as an aging artist reflects on

raw pigment mixed with

Tokyo & Kyoto and my

anguish to the point of

realizing

I abandoned my children

for texture & brooding

over the last decade

my cerebral theme has

been travel.

The poem ultimately offers fleeting visions of antiquity — and glimpses, however partial, of sculptures not unlike those at the Getty. “Once brightly painted/I am/a southern Italian/singer and prophet,” reads one fragment, while another conjures up a figure who is “lured by sailors dressed as/singing beauties.”

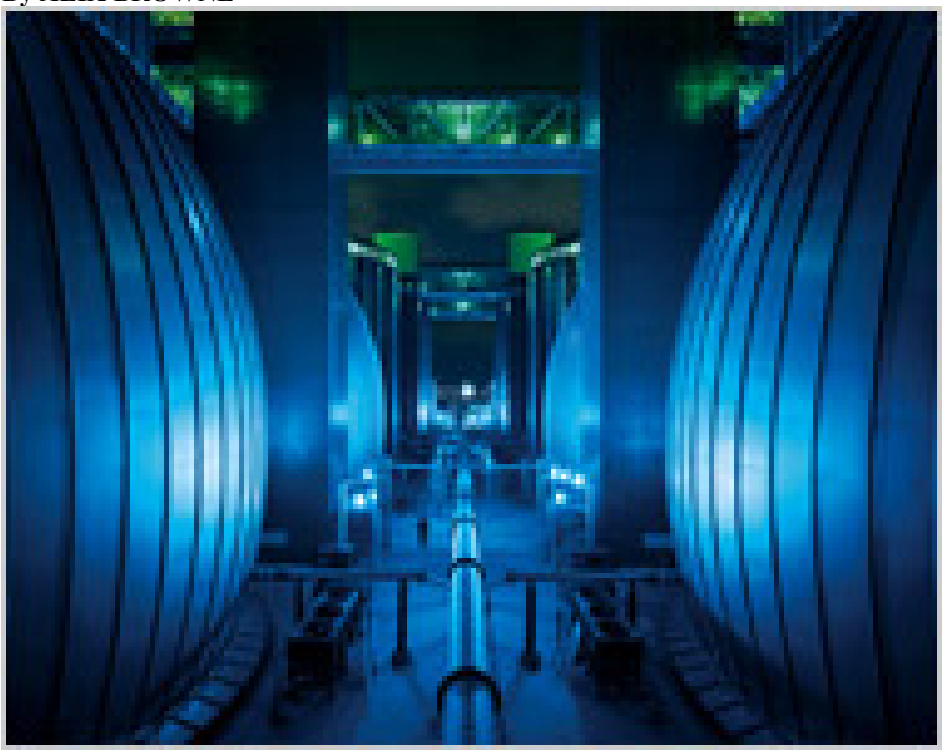
Mr. Dine expects the various charcoal smudges, cross-outs, and erasures on the walls to become integral to his piece, much as they did in his celebrated “name painting” from 1969, in which he wrote out in charcoal the names of everyone who ever mattered to him in the order in which he had met them. (The names become more famous —Leo Castelli, Jasper Johns, Red Grooms and so on — as you read on.) “Writing is a lot like drawing,” he said. “I find my calligraphy expressive.”

But he also knows that poetry often gets a bad rap for being elitist or inaccessible. “A lot of times people are not comfortable with poetry. And they’re going to say, ‘What’s this got to do with the artwork?’ I’m going to say, ‘Everything.’ ”

http://www.nytimes.com/2008/10/19/arts/design/19fink.html?_r=1&th&emc=th&oref=slogin

The Big Picture

By ALIX BROWNE



While you may have never heard of him, Hervé Descottes has perhaps had as large an impact on the contemporary New York skyline as any architect working today. The principal lighting designer and president of L'Observatoire International, Descottes has been charged with illuminating major landmark sites around the city from Columbus Circle to the newly renovated High Line.

"Lighting can have an incredible visible or invisible power," says Descottes, one of whose first projects as a lighting designer, back in 1991, was to light the Mona Lisa after it was reinstalled in the Louvre. Here, he is testing his handiwork at the New York City Department of Environmental Protection's Newtown Creek Wastewater Treatment Plant in Brooklyn, which was designed by Greeley and Hansen, Hazen and Sawyer and Malcolm Pirnie, in association with Polshek Partnership Architects, and will include a sculptural visitors' center by the artist Vito Acconci and a waterfront nature walk by George Trakas. It is a project that began more than a decade ago and will probably be finished sometime around 2015. The plant, with its 50-plus-acre site and eight massive sludge tanks operating 24/7, was hardly a subtle addition to the urban landscape (glowing right next to the Queens-Midtown Tunnel); the challenge, for the architects and also for Descottes, was to remain sensitive to the surrounding residential neighborhood. In other words, Descottes says, "we didn't want it to look like a refinery." This is usually the kind of industrial institution that requires only functional lighting, says Descottes, who ultimately enveloped the site in a veil of blue light. (Blue, he explains, has a sense of purity and cleanness.) L'Observatoire works on some 25 projects all over the world at any given moment — from Frank Gerhy's Louis Vuitton Foundation, under construction in the Bois de Boulogne, to a residential building to be built in Kuala Lumpur by Jean Nouvel. Still, the wastewater plant, he insists, is definitely one of the most glamorous. "Sometimes it doesn't smell so good," he says. "But at least it doesn't look so bad."

http://www.nytimes.com/2008/10/19/magazine/19style-t.html?ref=design

A Close-Up of Pop-Up Books, Magical and Movable

By AILEEN JACOBSON

East Hills

A TINY acrobat doing a 360-degree flip on a trapeze got Leah Fiterstein started on her collection of pop-up books. That was 24 years ago, and now highlights from the more than 1,500 volumes she has accumulated are being shown at the Tee Ridder Miniatures Museum of the Nassau County Museum of Art, a short walk away from the main museum.

“I can’t resist that moment of surprise” when a figure unfolds, Mrs. Fiterstein, 67, said during a recent tour through her East Hills home, not far from the museum in Roslyn Harbor. The basement of her split-level house — brimming with other items she has collected, including teapots and whiskey bottles — was the staging area for “Pop-Up Holiday Magic,” which opens on Wednesday. The 1930s book with the trapeze artist — “The Daily Express Children’s Annual No. 2,” edited by S. Louis Giraud — that started her collection won’t be there because it doesn’t have a holiday theme, but more than 100 of her other movable books will be.

Piled high on tables were arrangements ready to be installed in glass cases at the Ridder, which also houses pint-size rooms created by the museum’s namesake.

Black cats and vampires, of course, populate many of the Halloween books. Among them is “Mystery Manor,” a 2000 book designed by Willabel L. Tong, with gravestones in the front yard, including one marked Scared De Cat, and “The Horrors in the Haunted House,” a 2003 book by Keith Mosely, with skeletons dangling from rafters.

Thanksgiving, Christmas and Hanukkah will also get their due. In "The Victorian Advent Pop-Up Book," published in 1993 by Thomas Nelson, tiny lights glow inside a Christmas-decorated home. Mickey Mouse, Harry Potter and other popular characters make appearances elsewhere.

This is the second exhibition drawn from Mrs. Fiterstein's collection; "Pop-Up Fairy Tales" closed last weekend. This exhibition includes a cart full of pop-ups for children to handle (some from her collection and others she bought just for this), a scavenger hunt, previews of a Peter Pan book by the illustrator Robert Sabuda and a timeline that traces pop-ups to "the first known paper engineer," a 13th-century Benedictine monk named Matthew Paris.

Both exhibitions were guest-curated by Debra Wells, the sister-in-law of Mrs. Fiterstein's daughter, Heide Wells, and a graphic designer who works at the museum. When the chief curator, Franklin Hill Perrell, told her he was looking for exhibitions that would appeal to children, Mrs. Wells said, Mrs. Fiterstein's collection, which she had often seen, came to mind.

"We want to add life to the collection," said Mr. Perrell, adding that the exhibition is part of a move to make the Ridder a children's museum, which will happen officially in January with a Babar exhibition.

Many of Mrs. Fiterstein's books are from recent years, though she also owns some from the 1800s. She looks for unusual volumes, she said, on frequent trips to England with her husband, Gerry, and, in recent years, online.

Besides being enchanted by beautifully constructed books — she still can't figure out how the elaborate ones are made — she found them useful in her work, she said. Until retiring six years ago, she was a speech-language teacher for the Nassau Board of Cooperative Educational Services, working mostly with kindergartners and first graders, whom she visited at their schools in a bus stocked with her books.

"I started right away using them with the kids, to get them to make sounds," she said. The pupils were as awestruck as she was, she said, and she asked them to describe what they saw, thus encouraging reluctant speakers. "They were motivated. They loved it."

"Pop-Up Holiday Magic," Tee Ridder Miniatures Museum, Nassau County Museum of Art, Roslyn Harbor, Oct. 22 to Jan. 4; Information: (516) 484-9337 or www.nassaumuseum.com.

http://www.nytimes.com/2008/10/19/nyregion/long-island/19booksli.html?ref=design

Piecing Things Together

By BENJAMIN GENOCCHIO

In Newburgh, art galleries are few and far between. Though there is some noticeable upscale development along the river, much of the city, with its blocks of rundown working-class homes and storefronts, remains a far cry from its 19th-century status as "the gem of the Hudson." The architecture here dates back to the 1600s; this was once a beautiful place.

Ann Street Gallery is the city's only nonprofit art space. Two years old, it occupies a portion of the basement of a 19th-century hotel recently renovated by a local nonprofit group, Safe Harbors of the Hudson, which is devoted to providing affordable housing for the indigent, veterans and artists. Safe Harbors also sponsors the gallery.

The gallery is small but nicely fitted-out, with polished concrete floors and crisp white walls. There is a main gallery and a back room used for video and sound art. The emphasis is on emerging and midcareer artists from the Hudson River Valley, but works by artists from New York and further afield are also shown here.

The current exhibition at the gallery is "Collage Logic," a group show of 13 artists from New York and the wider region. It explores "the use of collage techniques and methodologies in contemporary art," according to Virginia Walsh, the exhibition's curator and gallery director. This is a rich and fertile area of artistic expression.

What is so interesting about this show is that few of the artists selected by Ms. Walsh make conventional collages. John Morton, for instance, has made an arresting sound installation using appropriated sounds from along the Hudson River. You hear fishermen talking, pipes clanging, water lapping, even a train speeding by.

Joel Carreiro appropriates images from art history and medieval manuscripts to create pastiche paintings. The source material is printed on heat-transfer paper, which he cuts into little strips and squares and then recombines to form interesting patterns. I like these works a lot, as much for their formal ingenuity as for their obvious beauty.

Thomas Weaver presents a terrific conceptual collage made of paintings, stencils, drawings, watercolors and writing, mostly on paper, bunched together on a wall. Across them, he has painted the outline of the frame of a house, suggesting a collection of ideas and thoughts gathered together under one roof, a metaphor for the artist's mind.

Other artists work with found materials. Jackie Shatz fuses together ceramics, paint, cloth and other found materials to make colorful, abstract wall sculptures. Imelda Cajipe Endaya collages together maps, candy wrappers and a variety of textiles to create works that reflect on childhood and, somewhat more obliquely, feminist issues.

The term collage comes from the French word coller, which means to glue. Not surprisingly, the show includes work by some artists who affix paper or other objects to a two-dimensional surface — the traditional form of collage. Among them are Jonathan Talbot and Vivien Collens, both of whom have clearly mastered the technique.

Mr. Talbot appropriates mostly black and white imagery from old books and magazines which he pastes together to create scenes that look like historical photographs. "The Stationmaster" and "The Bachelors Visit New York" depict arrangements of people against hybrid architectural structures. They are about dreams as much as memories.

Pablo Picasso probably produced the first modern collage, "Still Life With Chair Caning" (1912), consisting of a piece of oilcloth printed with a caning pattern and glued onto a canvas. By incorporating real objects into his picture, he blurred the distinction between painting and sculpture and opened up a whole new area for art making.

Collage has been put to many uses since then, as this show testifies. Perhaps the most ambitious use of it is Yeon Jin Kim's video "Dreams," which might be described as a travelogue of the subconscious. Much of the imagery was taken with a spy camera inserted inside an elaborate paper model of a city, also on display.

All told, this show contains a remarkably diverse and thoughtful group of works by artists who, though not household names, probably deserve to be better known. Collage may be a century old, but this show suggests that it will be around for a lot longer.

"Collage Logic," Ann Street Gallery,
104 Ann Street, Newburgh, through
Nov. 1. Information: (845) 562-6940
or www.annstreetgallery.org.

http://www.nytimes.com/2008/10/19/nyregion/westchester/19artswe.html?ref=design

The Audacity of Hopey

By DOUGLAS WOLK

THE EDUCATION OF HOPEY GLASS

Written and illustrated by Jaime Hernandez

114 pp. Fantagraphics Books. $19.99

LOVE AND ROCKETS

New Stories No. 1

Written and illustrated by the Hernandez Brothers

100 pp. Fantagraphics Books. Paper, $14.99

AMOR Y COHETES

Written and illustrated by Los Bros. Hernandez

Illustrated. 287 pp. Fantagraphics Books. Paper, $16.99

Jaime Hernandez's comics often provoke bursts of laughter — not necessarily because they're outright comedic, although they sometimes are, but because they're so ingeniously constructed. His new graphic novel, "The Education of Hopey Glass," begins with a hilariously perfect set piece: Esperanza Glass, known as Hopey, an ex-punk rocker who's been appearing in Hernandez's stories since the early '80s, is trying on framesfor her new glasses and rattling off impressions of what she associates with every pair. ("Holy cow! Cubs win!") She's also flirting with the saleswoman, who's too young to pick up on Hopey's cultural allusions. Hopey's in her 40s now, and over the next few pages Hernandez makes it clear that the impulsive insouciance that made her so charming in her early 20s has gotten her nothing but an ant-infested home and a long-suffering girlfriend.

"Day by Day With Hopey," the first of the book's two sequences of brief vignettes, follows a week in Hopey's life as she prepares to start a job that actually requires responsibility: teaching young children. (When Hernandez draws little kids, his vivid evocations of body language give way to an endearing, exaggerated style, all vaudeville scenery-chewing and wailing "Peanuts" heads.) It also sneaks in a few appearances by Hopey's best friend and Hernandez's best-loved character: Maggie Chascarrillo. A former hotshot mechanic who's now settled into her middle-age spread as the manager of an apartment complex in the San Fernando Valley, she's given up on most of her ambitions, but she seems more centered than she's ever been — and Hernandez gets across her personality shift more with images than with words.

The other half of "The Education" is a romance on the periphery of a crime story. Ray Dominguez, another longtime Hernandez cast member, is getting involved with a loudmouthed stripper/actress named Vivian, whose previous boyfriend, a small-time criminal, has just been whacked. The details of the murder gradually emerge as Ray and Vivian wander through hopeless auditions and terrible Los Angeles parties and seedy little comic-book conventions, but the story's really about how Ray is still hung up on Maggie, years after they've broken up. It's a crisply orchestrated black farce, a ballet of frustrated and misdirected desire presented with delicious economy of language and line. What keeps it from collapsing into cynicism is Hernandez's obvious affection for almost all his characters.

Like most of Hernandez's books, "The Education" was initially serialized in "Love and Rockets," the series he's shared with his brother Gilbert since 1982. The two virtually never collaborate, and they could scarcely be more dissimilar in style, but their work appears side by side so regularly that they often simply call themselves "Los Bros. Hernandez." After 50 issues as a magazine and another 20 in a more standard comic book format, "Love and Rockets" has now entered its third incarnation, as an annual paperback book subtitled "New Stories." Jaime's cover for the first volume shows a gigantic superheroine calmly removing the Art Deco top of a skyscraper and replacing it with a propeller beanie. That's pretty much what the brothers are up to on the inside: having established themselves as masters of the subdued, lit-fic-style graphic novel, they're hauling the rockets back onto the launch pad and blasting off.

Gilbert Hernandez, in particular, has made a near-total break with the densely plotted family dramas he's best known for, shaking off the characters who've clung to him for the last few decades. His half of "New Stories" includes a horrific Jodorowsky-ish fable in which a wandering man bloats up into a monster, a free-associative fantasy about Dean Martin and Jerry Lewis look-alikes fighting a legion of aliens with spears, and a where-did-that-come-from short involving a gambling kangaroo and a street of humanoid penises. In other words, he's bashing away with a crowbar at the polite, more or less realist boundaries of his Palomar and Luba stories; what he's lost in the depth and historical sweep of that material, he's regained in feral, foaming energy. (The prolific Gilbert has also been writing and drawing manic "adaptations" of nonexistent potboiler B-movies, including last year's "Chance in Hell," the recently serialized "Speak of the Devil" and the forthcoming volume "The Troublemakers.")

Jaime Hernandez's contribution to "New Stories" sticks with his familiar cast, but it's just about the weirdest, most radical thing he could possibly draw, given his reputation: the first two chapters of a sci-fi superhero serial, "Ti-Girls Adventures No. 34." Beatríz (Penny Century) García, a social-climbing friend of Maggie's, has acquired superpowers and is out of control; a defunct team of superheroines reunites to try to track down Penny's missing daughters in outer space. "Ti-Girls" is as playful as any of Jaime's more down-to-earth work, and he's quietly been setting this one up for years. Flip through "The Education of Hopey Glass" after reading it, and you'll notice that a lot of his superheroines appear there in one guise or another, too.

The shift in "New Stories" toward the fantastic is a counterintuitive move at a moment when there often seems to be a gulf between the "serious" graphic novel and genre-entertainment comics. But the Hernandez Brothers have rarely bothered with conventional wisdom — in the early '80s, a black-and-white comic about Angeleno mechanics and Central American villagers seemed impossibly outré — and they've always had a fondness for neon-lighted sci-fi. "Amor y Cohetes," the final volume of seven collecting the first (1982-1996) "Love and Rockets" series, is a gallimaufry of 42 short pieces that don't

quite belong to either Jaime's Maggie-and-Hopey continuity or Gilbert's tales of the inhabitants of Palomar, aside from a pair of tales in which the brothers tackle each other's characters. (There are also a few stories by Mario Hernandez, the Zeppo of the family.) A lot of this book, in fact, consists of twisted riffs on monsters-and-spaceships pulp. The most assured material here is Jaime's "Rocky and Fumble" sequence of stories about a girl and her pet robot, which can be read either as a frothy sci-fi romp that abruptly curdles midway through or as a portrait of a woman whose fantasy life ultimately devours her whole.

The most assured Hernandez comics, though, aren't necessarily the best — Gilbert, in particular, thrives without a rule book. His "BEM," the longest and earliest story here, is a 40-page spray of molten inchoate energy, full of naked warriors and conga players and giant locust creatures. The same vigor comes through in the later, more focused experimental pieces in "Amor y Cohetes" — a self-lacerating mashup of pulp-comics styles and psychosexual loathing, a brisk little biography of Frida Kahlo, a silent three-pager of boxers beating each other bloody called "Marilyn Monroe" — and in the push into uncomfortable territory both he and Jaime have embraced for "New Stories." At an age when artists tend to have settled into refining a successful approach, the Hernandez Brothers are challenging themselves as much as they did a quarter-century ago, and it's a joy to see them freaking out.

Douglas Wolk is the author of "Reading Comics: How Graphic Novels Work and What They Mean." He writes regularly about comics for the Book Review.

http://www.nytimes.com/2008/10/19/books/review/Wolk-t.html?ref=design

ALEXANDER CALDER

Calder at Play: Finding Whimsy in Simple Wire

By HOLLAND COTTER

Is art basically glorified child's play, extending into adulthood, through a lifetime, picking up ideas and gaining finesse as it goes? That's one way to think of "Alexander Calder: The Paris Years, 1926-1933" at the Whitney Museum of American Art. Few exhibitions have focused so intently on one artist's child within. It's a Peter Pan syndrome show.

It's also a large show, with a chunky, charming catalog. Yet it feels intimate and light, not to say lightweight. Gallery by gallery, it's as suspenseful and insubstantial as a magic act: what will the artist pull from his sleeve next? The story it tells is like a Kids R Us version of early 20th-century Modernism, with a grown-up surprise at the end.

Calder didn't start out with ambitions to be an artist; if anything, he was pulled in the opposite direction. He watched his father, a professional sculptor, fret over commissions and struggle with money. So when it came time for college the young Calder chose an engineering school in New Jersey over art school.

But of course he was an artist, a natural. He may just not have known at first what that meant. Even as a child he was astonishingly inventive. The tiny figure of a rocking-horse-style bird shaped from brass sheeting is, for economy of form and conceptual daring, one of the more radical works in the show. He made it when he was 11.

He made stuff all the time. He was one of those people with nonstop eyes and hands: every scrap of stray matter was a candidate for transformation. Give him some wire, clothespins and a scrap of cloth and, presto chango, you had a bird or a cow or a circus clown: nothing, then something, which is what magic is.

There's a hyperactive pace to his early career. While working at engineering jobs after college, he was also drawing like crazy and designing toys. In 1923 he enrolled at the Art Students League to study painting; John Sloan and George Luks were his teachers. At the same time he took on illustrating gigs for publications like The New Yorker and The National Police Gazette.

His academic drawings from the time are gauche and ordinary. The staying-still-in-a-studio they required obviously cramped his style. Much fresher is the dashed-off, manic-looking magazine work. And his Ash Can School-type paintings of New York scenes — a drunken party; a trip to the Ringling Brothers and Barnum & Bailey Circus — have a gawky spark of life. Then there are his pen-and-ink drawings of zoo animals. They're in a different category, almost by a different artist, one more relaxed and assured. Often done as one continuous line, they are like an effortlessly sophisticated form of penmanship. So are some of the openwork sculptures of bent and twisted wire that he began to experiment with at this time.

In 1926, with all these balls in the air, he suddenly moved to Paris, because motion for him was a stimulant and because he felt that Paris was the hot place to be, which it was. With its crowded cafes, charged thinking, endless talking and jumpy personalities, the city was hyperkinetic. Calder fell in love with it. And, although he continued to return to New York for long stretches, he made Paris his home base for seven years.

His wire sculpture took off there. Several examples in the form of portrait heads are the first thing you see when you step off the elevator on the Whitney's fourth floor. They're an arresting sight, in a gently wow-inspiring way. Wows were what Calder was after, along with chuckles and satisfied ahs. He was a showman, a performer. "See what I can do, right before your eyes, without even trying?" his art seems to say.

For his purposes industrial steel wire was an ideal medium. It was cheap, malleable, portable and equally adaptable to precision work and doodling, which to him were almost the same thing. Wire was like three-dimensional ink; it was a means of combining drawing and sculpture in space.

In the Paris years he used it for portraiture. His first subject was a star he admired from afar, Josephine Baker. She was the toast of the town in the 1920s. One look at film clips of her dancing a semi-nude Charleston tells you why. Calder made five small Baker figures; four are in the show. With their tiny heads, spiraling breasts and long, long single-strand legs, they catch something of the image Baker wanted to project: that of an ethnographic specimen come to irrepressibly self-amused life.

He made other figures too, of the tennis champion Helen Wills, of John D. Rockefeller playing golf. They are the work of a pop illustrator, clever but nothing special. But for people he actually knew, portrait heads were the form of choice. Of the 18 examples in the show, most depict people Calder had met in avant-garde circles in Paris, including celebrity friends like Edgard Varèse, Joan Miró and Alice Prin, the multitasking muse better known as Kiki de Montparnasse. You can see why Calder did these likenesses: they were an attention-getting novelty; they advertised his skill; they gave him a pretext to network.

They also look as if they were fun to make. One of the attractive features of Calder's art from this period is its gee-I-could-do-that unpretentiousness. At the same time each is a fabulous little virtuosic feat, abstract but exacting. Set on bases or freely suspended, and casting subtle shadows — Jennifer Tipton, the theatrical lightning designer, was in charge of illumination — the portraits have the wit and refinement that will show up again in Calder's first abstract sculptures.

Refinement is not a quality associated with the famously funky tabletop assemblage known as Calder's Circus. A prime draw of the Whitney's permanent collection, it has rarely been off view since the museum acquired it 25 years ago. But it gets a rethinking here.

Up to now it has been exhibited as a compact, one-ring affair with its many tiny handmade figures — clowns, acrobats, animal trainers and so on — doing all the varied things they do at once. The show's curators, Joan Simon of the Whitney and Brigitte Leal of the Centre Pompidou in Paris, have separated the components into individual acts meant to be seen as taking place sequentially, a format that corresponds to the way Calder himself presented the work in live performances.

You can see him giving one in a 1955 film by Jean Painlevé, which is in the show. Calder introduces the figures silently one by one, manipulating them and activating the low-tech mechanisms (cranks, pull-strings, air hoses) that animate their activities. If, like me, you've always found Calder's Circus a little too cute for comfort, the film may change your mind.

When at one point Calder slowly and carefully removes layer after layer of hand-sewn costumes from one clown figure until he arrives at what looks like a skeleton, it's hard to known whether you're seeing a circus or a medieval morality play. No wonder the original Paris performances pulled in the savvy audiences they did. Jean Cocteau, Marcel Duchamp and Piet Mondrian were among the many vanguard types who sat on crates and watched with rapt attention.

The Whitney show's real shock comes a bit later, though, in the last three galleries, when Calder the polymath entertainer becomes Calder the Modern sculptor. The shift happened almost literally overnight. In October 1930 he visited Mondrian's Paris studio; instantly he became an abstract artist. And for some people Calder starts to become interesting only at this point. No more Kikis and tennis players. Now everything is floating circles and curving lines anchored by balls in space.

But two things stayed constant: motion and play. For conservation reasons only one sculpture in the Whitney show is now motorized as intended; others can be seen in action on film. And action is the essence in a piece like "Small Sphere and Heavy Sphere" (1932-33), which consists of two suspended wooden balls and, set out on the gallery floor, a wooden box, four wine bottles, a can and a gong.

Nothing much, right? Until — as seen on film — the balls, attached to a motorized bar, start to move in a slow circle, hitting a bottle, then the can, then the gong. Music! (Varèse loved this piece.) Yet move a bottle an inch or two this way or that and the performance changes. Turn on a fan or open a window and you could create a new score. The game Calder is playing is a finely tuned, verging on magical, game of chance. And it really is a game. And it really is play.

"Alexander Calder: The Paris Years, 1926-1933" remains at the Whitney Museum of American Art, 945 Madison Avenue (at 75th Street), through Feb. 15. It will then be at the Centre Pompidou, Paris, from March 18 through July 20.

http://www.nytimes.com/2008/10/17/arts/design/17cald.html?ref=design

'CLIMATE CHANGE'

Apocalypse Now, via Diorama

By EDWARD ROTHSTEIN

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Water, 16 feet of it, smothers the southern tip of Manhattan, covering the landfill of Battery Park City. Tropic coral reefs are stripped of life, their rocks pocked with contusions. Polar bears rummage in junk heaps seeking food amid construction debris. Glaciers split into ice chips, floods ravage coastlines, droughts parch the Earth and forest fires rage untamable.

If the End of Days were going to be portrayed in a museum exhibition, it might look like the array of natural disasters, both real and imagined, that can be found at "Climate Change," which opens Saturday at the American Museum of Natural History.

There is something almost biblical about these worst-case scenarios, apocalyptically suggested even in the subtitle: "The Threat to Life and a New Energy Future." And if the plagues promised with global warming don't include an onslaught of frogs, there is more than enough to worry about: the exhibition predicts proliferation of malaria and desperate foraging of wildlife.

All this is because of something that can't be seen or smelled or touched, a gas plentifully found in the natural world: carbon dioxide. Produced in abundance by an industrial urban world that depends on the burning of coal and oil, this gas has so increased its atmospheric presence and has so clear a "greenhouse effect" — preventing heat from escaping the Earth — that, the show argues, the sun's energy is already raising the planet's temperature (about 1.4 degrees Fahrenheit in the last century), with doleful consequences to follow.

This exhibition, organized by Edmond A. Mathez, curator in the earth and planetary sciences department at the museum, together with Michael Oppenheimer, a geoscientist at Princeton University who has been

active in international efforts to control global warming, is grim and unrelenting, but not without hope. Its final gallery is full of alternative energy and conservation proposals, and younger visitors will find some amusement as they try to cut down their carbon footprints with interactive displays.

The show's focus, however, is on how dire a state of crisis we are in. Emerging from this ambitious and, at times, overwrought show, you almost expect to see a new set of dioramas and fossilized skeletons showing how Homo sapiens once dwelt on this planet in arrogant mastery before the species burned its way to oblivion. This vision of global warming — already globally familiar — will also globe-trot to St. Louis, Cleveland and Chicago, as well as Denmark, the United Arab Emirates, Spain, South Korea and Mexico.

There are real issues to be considered here — questions about probabilities, alternative technologies, industrial evolution, relationships between developed and undeveloped nations — but they are never really explored. The main impression, instead, is of an almost religious urgency. "Repent!" these displays seem to call out, "Repent! Before it's too late!" And perhaps the religious overtones are no accident. Recently the physicist Freeman Dyson wrote in The New York Review of Books that environmentalism has become a "worldwide secular religion" in which the "path of righteousness is to live as frugally as possible."

Only here the urgency is not otherworldly. The glimpses of what could happen or what might happen or what "many experts" or "most experts" think will happen — as the exhibition puts it again and again — are meant to be spurs to immediate action. "Climate has changed throughout Earth's long history," but this time is different, the exhibition says, because "for the first time, humans are causing it." A worldwide effort is required, "and it needs to start now."

So running through the show is a thread mixing urgency and blame. That same combination is what gives the issue of global warming so political an edge right now: the urgency is directed toward particular policies and the blame toward particular parties. The politicization makes it all the more difficult to talk about global warming; a lot of money — perhaps hundreds of billions of dollars across the globe — is also at stake in the changes being sought. And while there is a scientific consensus about global warming, there is also a significant minority of skeptics about one portion or another of the theory, and the issues are notoriously complex. Mr. Dyson said the minority of scientific skeptics and the majority of scientific believers now engage in a passionate "dialogue of the deaf," in which very little debate or convincing goes on.

It would have been helpful had the exhibition taken such disagreements and passions into account and made its case less sensationally. Though its sweep is an order of magnitude more sober than Al Gore was in the film "An Inconvenient Truth," the exhibition's insistence inspires wariness. That begins even in the opening gallery where a red neon line stretches across two walls showing the increase of the "heat-trapping gas carbon dioxide" in the atmosphere over the last 400 years. The graph provides a powerful image of a rising line overlaying images of technological change and heading steeply upward after 1950.

But the graph is set up so the line begins at a level below a child's knees and ends when it is far over an adult's head. The numbers tell us that the increase over 400 years was about 40 percent; the image makes it seem as if the increase was perhaps 600 percent. One gets a similar sensation from a table showing month-by-month warming in recent years, when compared to average monthly temperatures between 1951 and 1980. That interval seems arbitrary and includes periods of falling temperatures (which help make the contrast greater). Yet when illustrating that "temperature and CO2 march in lockstep," the show chooses intervals of centuries instead. Why not make the case with more consistency instead of seeking greatest effect? That would also require some explanation of seeming anomalies, for example, the way the monthly table shows increases in temperatures between 1900 and 1940, followed by decreases until the late 1970s — facts that don't seem in lockstep with the graph of carbon dioxide concentrations.

And why show a model of Lower Manhattan with the stark consequences of a five-meter rise in ocean level? That would happen, we are told, if there were a complete "polar ice-sheet meltdown," something that "experts consider unlikely to happen anytime soon." The model "doesn't predict the future," the text acknowledges, but "it does illustrate one possible outcome," though perhaps "thousands of years in the future." In other words this is something so unlikely that it is unconnected to either immediate threat or practical concern. The image is used to stir advocacy.

Such tendencies are troubling. One of the controversies about global warming, after all, recently raised by Bjorn Lomborg in his "Skeptical Environmentalist's Guide to Global Warming," called "Cool It," is that policies adopted to deal with climate change must be weighed according to their costs. Some measures may be extremely expensive yet almost inconsequential. But how can a policy be assessed if its alternative is presented as apocalypse?

Apocalypse is too easy a prediction when there is so much still uncertain; no one has succeeded in completely modeling climate's past, let alone its future. "Many experts think," we are told, that warmer ocean waters will make hurricanes more powerful. But "it is difficult to predict how much more intense hurricanes could become." That makes it seem as if this is some rough guess, when the claims being made for climate change are in the precision of the observations and conclusions. And are the "many experts" even correct about hurricanes? The scientist (and global-warming skeptic) Roy W. Spencer has pointed out that experts at the National Hurricane Center have been warning for decades that there had been a lull in hurricane activity and that a natural 30-to-40-year cycle would bring on a resurgence, something having no connection at all to global warming.

Some dangers and data are beyond question, but some seem not to be, given the hedging and uses of "likely" often invoked here. Yes, there is reason for concern and conservation. But what we need from a museum is not proselytizing but a more reflective analysis. An interactive display shows how carbon dioxide emissions can be decreased by altering habits, for example, but what impact will that actually have on changes in global temperature? And if there are counterarguments to be made about aspects of global warming, why can't they be addressed here? Take a look at the two sides of the Web site climatedebatedaily.com to see how much disagreement there can be.

This exhibition, in other words, made me feel like an agnostic attending church and listening to sermons about damnation. It may all be true — some of it assuredly is — but from a museum, particularly one devoted to natural science, it is reasonable to seek more revelation.

"Climate Change: The Threat to Life and a New Energy Future," opens Saturday and continues through Aug. 16 at the American Museum of Natural History, Central Park West and 79th Street, (212) 769-5100, amnh.org.

http://www.nytimes.com/2008/10/17/arts/design/17clim.html?ref=design

'GRANT AND LEE IN WAR AND PEACE'

Two Generals, Still Maneuvering

By CHARLES McGRATH

"Grant and Lee in War and Peace," which opens on Friday at the New-York Historical Society, is a rejiggering of an exhibition mounted last year by the Virginia Historical Society in Richmond, where it was called "Lee and Grant." The flip-flop in billing is partly a nod to local bias and to the fact that Grant is, after all, buried right here in New York, where he was a bit of a substance abuser and lost a fortune on Wall Street — he was one of us, in other words — while in Richmond they prefer the white-bearded patriarch who seemingly had no faults at all. But the title switch is also a reflection of the way these two generals, implacable opponents on the battlefield, have been linked by posterity in push-me-pull-you fashion, so that the reputation of one can't go up unless the other's sinks.

For most of the last 140 years Lee, or a romanticized version of him, has been on top. This Lee is the tragic and valorous embodiment of the Lost Cause, a mythic South that fought not so much to defend slavery as to protect states' rights and a noble, superior way of life, while Grant becomes a drunken butcher, a slaughterer of his own men and a failed, scandal-plagued president who belongs in the company of Warren G. Harding.

The scale had so far tilted that by 1920 or so, when John Leon Gerome Ferris painted his famous depiction of the surrender at Appomattox, "Let Us Have Peace, 1865" — which is in the show — he put Lee, regal and imposing, bathed in light, in the center of the picture, while a shadowy, supplicant Grant, in muddy boots, approaches from the left. If you didn't know better, you would think Lee had won.

Only in the last few years have historians tried to address the balance a little — demolishing the long-cherished notion that Lee was personally opposed to slavery, for example, and arguing that it was he who was reckless about casualties and that overaggressiveness contributed to his defeat. In this light Grant starts to look a little better. Even his drinking has been exaggerated, some biographers now claim. The Historical Society show incorporates some of the latest scholarship pointing to Grant's advanced views on civil rights and Indian policy, and even suggests that the failures of Reconstruction were not his so much as those of the nation, which lacked the political will to follow his lead.

But "Grant and Lee" does not, strictly speaking, weigh the merits of one versus the other; nor is it really a Civil War show. Die-hard buffs and Civil War re-enactors seeking to learn more, say, about campfire cookery or latrine excavation at Manassas will probably be a little disappointed, though there is an

extensive display examining the Wilderness campaign of 1864-65. And, as always at the New-York Historical Society, there is a lot of excellent stuff on view, some of it borrowed, some of it from the society's own vast troves.

Looking for one of Zachary Taylor's spurs or a shako from the Mexican War? No problem. The New-York Historical Society has everything you need right there in the attic at 170 Central Park West. Also on display are Lee's tiny dancing slippers (he was a compulsive flirt and ladies' man), his sword and revolver (courtesy of the Museum of the Confederacy) and Grant's high-pommeled Mexican saddle. There are some audiovisual presentations, and a computer screen that lets you flip through a sketchbook kept by Capt. Abner Doubleday during the Mexican War, a few years after he supposedly invented baseball.

"Grant and Lee" tries to take a longer view of the two men, putting them in a context that carries right up to the present. As Louise Mirrer, the president of the Historical Society, said last week, the organization recently did two big shows on slavery and felt that it had to offer something that went beyond the traditional Civil War narrative. So the new show explores larger questions about the origins and growth of the military in the United States and about the proper role of the army in a civilian, democratic society.

The exhibition begins at West Point, pointing out that when Grant (Class of 1843) and Lee (Class of 1829) went there it was as much an engineering school, where cadets learned to sketch, paint, survey and draw maps, as it was a proving ground for future soldiers. (There are samples of both men's work, and Grant, though otherwise a dismal, demerit-ridden student, turns out to have been a better artist than Lee, just as he proved to be by far the better writer.)

And fully a third of the show looks at the Seminole Wars, the crisis of Bleeding Kansas and the Mexican War in ways that are meant to draw parallels with American involvement in Vietnam and in Bosnia and Kosovo, and with current debates over immigration.

It's a provocative arrangement, especially at the end of the show, where the viewer is encouraged to think about the challenges of Reconstruction in light of American efforts to stabilize and rebuild Iraq. And yet thinking about the army this way, as a tool of policy, risks underplaying the degree to which the Civil War was not just another military engagement, but, as Drew Gilpin Faust has argued in her recent book "The Republic of Suffering," something approaching massacre on an organized scale.

This was a conflict that fundamentally changed the nature of the American military, turning it into a bureaucracy dependent on political favor and patronage, and that changed the nature of warfare itself. Slaughter became ruthlessly efficient, as did economic war, and in the brand-new arena of public relations, battles began to be waged of the sort that provoke museum exhibitions a century and a half later.

Though the exhibition doesn't dwell on the personalities of the two generals, they keep asserting themselves nonetheless. The differences between them are apparent in the very first gallery, where a portrait of Lee, the West Point graduate, commissioned by his wealthy plantation family, hangs next to a reproduction of a little daguerreotype that was all the Grant family of Point Pleasant, Ohio, could afford.

Lee, brown-haired and clean-shaven except for a dashing mustache, looks like a Byronic hero, while Grant appears to be squirming under a pair of epaulets the size of scrub mops. Lee's uniform coat, in a case down the hall, is trimly tailored and festooned with gold braid; Grant's, next to it, is made of shapeless black sackcloth and is devoid of decoration. Unlike Lee, Grant never looked the part of a general — he sometimes seemed uncomfortable in his own skin, let alone in a uniform — and that he was so good at generalship is something of a miracle. The wall labels play down the extent to which he had been a failure at just about everything else.

The show suggests that the style of each general was partly shaped by his commanding officer in the Mexican War, in which Lee's mentor was Winfield Scott, Old Fuss and Feathers, while Grant was a protégé of Zachary Taylor, Old Rough and Ready, but the viewer senses that the differences were deeper than that.

In some photographs taken near the end of his life, Lee already looks marmoreal — a statue of himself — as if he has become trapped in a myth of his own making, while Grant remained a pragmatist and a self-inventor to the end. In 1884, broke and dying of throat cancer, Grant reluctantly sat down and wrote his autobiography, hoping it would sell well enough to leave his wife a legacy.

Fittingly, a copy of his "Personal Memoirs," which became one of the best-selling books of the 19th century, is in a case at the end of the show, though the wall label quotes from Whitman and not from Grant's own prose, which was something new at the time, free of the false piety and flannel-mouthed rhetoric that characterized so much Civil War literature. Grant's book, like its author, was clear, concise, no-nonsense and scrupulously honest, and it's the best exhibit we have of what this war was really like. The only thing he was wrong about was his conviction that it would deter us from ever having another one.

"Grant and Lee in War and Peace" continues through March 29 at the New-York Historical Society, 170 Central Park West, at 77th Street; (212) 873-3400, nyhistory.org.

http://www.nytimes.com/2008/10/17/arts/design/17hist.html?ref=design

RACHEL WHITEREAD

Hidden Corners of the Neighborhood

By KAREN ROSENBERG

BOSTON — In signature works like “Ghost” and “House,” the British sculptor Rachel Whiteread made plaster casts of the interiors of London homes. Monumental yet ethereal, these works addressed Minimalist sculpture with polite deference while striking up bold conversations about urban preservation. (“House,” a public-art commission made in a condemned East London terrace house and exhibited in situ, was controversial enough that a local council destroyed it after just a few months.)

Ms. Whiteread’s latest project is not a single dwelling but an entire village: an installation of some 200 vintage dollhouses lighted from within and arranged on stepped pedestals in a darkened room. “Place (Village),” the centerpiece of a mini-survey devoted to the artist at the Museum of Fine Arts here, may strike the artist’s admirers as a bizarre and kitschy departure. Viewers who have never seen one of her room-size casts won’t really get a sense of her work from this piece, which is making its United States debut here.

Still, the exhibition, which includes drawings and a few smaller sculptures, reveals the more emotive side of an artist who can come off as somber and humorless. Standing in the midst of “Village,” you have the sensation of floating over the rooftops of Chagall’s Vitebsk.

This is odd, considering that Bruce Nauman is the name that usually comes to mind when one looks at Ms. Whiteread’s art. Mr. Nauman’s 1965 sculpture “Space Underneath My Chair” has been described as the inspiration for Ms. Whiteread’s entire career. Her 1995 installation “Untitled (100 Spaces),” an inverted-Minimalist field of multicolored resin casts, acknowledged the debt directly.

Ms. Whiteread, who in 1993 became the first woman to receive the Turner Prize, has a strange relationship with the so-called Y.B.A. (Young British Artists) generation, which came to broad attention

in that decade. In both her work and her persona she shies away from the confessional and confrontational manner of Tracy Emin and Sarah Lucas, to name two contemporaries.

It's instructive to compare Ms. Whiteread's "Cabinet XI," in this exhibition, with one of Damien Hirst's medicine cabinets. Mr. Hirst's sculptures are Pop wunderkammers, brimming with brand-name pharmaceuticals in glossy packaging. Ms. Whiteread's is filled with plaster casts of boxes, all unlabeled, in the yellow-and-gray palette of a Morandi painting.The appeal of her art is that it grounds Minimalism in the world of everyday things. A cube might look like one of Donald Judd's "specific objects," but it represents the inside of an ordinary cardboard box.

The prosaic nature of her art assumed a quiet dignity in "The Nameless Library" (2000), her Holocaust memorial in the Judenplatz in Vienna. Only the edges, rather than the spines, of books are visible in this inside-out reading room.In a sense Ms. Whiteread is up to her usual tricks in "Place (Village)" — reversing interior and exterior space through lighting instead of through plaster casting. The dollhouses are devoid of furniture, but many have wallpaper, carpets, trompe l'oeil curtains and even artwork, echoing the details sometimes found on the surfaces of Ms. Whiteread's cast rooms.

The variety of architecture represented in the installation, a semi-credible English suburb, ranges from Georgian mansions to Tudor cottages to Modernist fortresses. Some of the houses are handmade, others manufactured. All were acquired secondhand in antique shops or at Web sites like eBay over the last two decades.The installation, which has been exhibited at the Hayward museum in London, the Donnaregina Museo d'Arte Contemporanea in Naples and the Centro de Arte Contemporáneo in Málaga, Spain, has been uniquely configured for each location. (In Italy the houses were arranged in tidy rows.)

As an outgrowth of a personal collection, "Village" feels proprietary in a way that Ms. Whiteread's cast sculptures do not. And it's impossible to look at all those empty houses, however miniaturized, without thinking about the current epidemic of foreclosures. More than any other Whiteread sculpture since "House," "Village" acknowledges class tension.

"Village" is also interesting in that it simultaneously encourages and thwarts voyeurism, inviting viewers to peer into one empty room after another. Eventually it turns the tables: the illuminated windows become hundreds of Lilliputian eyes.In two adjacent galleries, six cast sculptures offer a fragmentary look at Ms. Whiteread's better-known body of work. Some of these are extraordinarily subtle: plaster casts of doors propped against the wall briefly register as the real thing, until you notice that the paneling is raised and the hinges are hollowed out. More eye-catching is "Untitled (Amber Floor)" (1993), in which a rubber cast of a section of wood floor snakes its way from wall to ground like a Robert Morris felt piece.

Drawings from all stages of Ms. Whiteread's career round out the show. The earliest are studies for sculptures, made on graph paper with felt-tip pen and, notably, correction fluid. The most recent, studies for "Village," combine gouache, pencil and collaged images of different types of houses. These mostly forgettable works on paper confirm that Ms. Whiteread is not a draftsman by nature; she thinks in terms of volumes, not lines.

The scattering of drawings and sculptures does provide some context for the strangeness of "Village." Walking from the sculpture galleries into this installation is like visiting the home of a friend with immaculate Modernist taste and stumbling on a hidden room filled with knickknacks.

"Rachel Whiteread" continues through Jan. 25 at the Museum of Fine Arts, Boston, 465 Huntington Avenue; (617) 267-9300, mfa.org.

http://www.nytimes.com/2008/10/17/arts/design/17Whit.html?ref=design

Ghostly Glow Reveals Galaxy Clusters In Collision

Superimposed false-color images of the galaxy cluster A521. The blue color represents hot gas typical of many galaxy clusters detected by the Chandra X-ray Observatory. The shape of the X-ray emission indicates that the cluster has undergone a recent collision or "merger event" that could generate turbulent waves. The red represents radio emission at 125 cm wavelength. The bright radio source on the lower left periphery of the X-ray gas is a separate source. The region of radio emission generated by turbulent waves is located at the center of the cluster, where the colors overlap. (Credit: Radio (NCRA/GMRT/INAF/G.Brunetti et al.); X-ray (NASA/CXC/INAF/S.Giacintucci et al.))

ScienceDaily (Oct. 18, 2008) — A team of scientists, including astronomers from the Naval Research Laboratory (NRL), have detected long wavelength radio emission from a colliding, massive galaxy cluster which, surprisingly, is not detected at the shorter wavelengths typically seen in these objects.

The discovery implies that existing radio telescopes have missed a large population of these colliding objects. It also provides an important confirmation of the theoretical prediction that colliding galaxy clusters accelerate electrons and other particles to very high energies through the process of turbulent waves. The team revealed their findings in the October 16, 2008 edition of Nature.

This new population of objects is most easily detected at long wavelengths. Professor Greg Taylor of the University of New Mexico and scientific director of the Long Wavelength Array (LWA) points out, "This result is just the tip of the iceberg. When an emerging suite of much more powerful low frequency telescopes, including the LWA in New Mexico, turn their views to the cosmos, the sky will 'light up' with

hundreds or even thousands of colliding galaxy clusters." NRL has played a key role in promoting the development of this generation of new instruments and is currently involved with the development of the LWA. NRL radio astronomer and LWA Project Scientist Namir Kassim says "Our discovery of a previously hidden class of low frequency cluster-radio sources is particularly important since the study of galaxy clusters was a primary motivation for development of the LWA."

The discovery of the emission in the galaxy cluster Abell 521 (or A521 for short) was made using the Giant Metrewave Radiotelescope (GMRT) in India, and its long wavelength nature was confirmed by the National Science Foundation's (NRAO) Very Large Array (VLA) radio telescope in New Mexico. The attached image shows the radio emission at a wavelength of 125cm in red superimposed on a blue image made from data taken by the Chandra X-ray Observatory.

The X-ray emission comes from hot thermal gas, a well-known sign-post of massive galaxy clusters. Furthermore, its elongated shape indicates that the cluster has undergone a recent violent collision or "merger event" in which another group or cluster of galaxies was swallowed up by the gravitational potential of the main cluster. Interferometrics Inc. and NRL scientist Tracy Clarke, who is also the LWA System Scientist, notes "In addition to teaching us about the nature of Dark Matter, merging clusters are also important in studies of the mysterious nature of Dark Energy. Understanding these two strange components of the Universe will help us understand its ultimate destiny."

In the radio image there is a strong, oblong source of emission located on the lower left periphery of the X-ray gas detected by Chandra; this is a separate source. In the center of the cluster, within the region indicated by a dashed circle, there is radio emission which changes significantly with wavelength. At the longest wavelength (125 cm, shown) it is clearly detected, but at a wavelength of 49 cm it is much fainter, and it is almost entirely gone at 21 cm wavelength. This multi-wavelength picture of the diffuse emission is in good agreement with theoretical predictions for particle acceleration by turbulent waves generated by a violent collision.

In a broader astrophysical context, galaxy clusters are the largest gravitationally bound systems in the Universe and their collisions are the most energetic events since the Big Bang. Says team leader Gianfranco Brunetti (Instituto di Radioastronomia, Bologna, Italy), "The A521 system provides evidence that turbulence acts as a source of particle acceleration in an environment that is unique in the Universe due to its large spatial and temporal scales, and due to the low density and high temperature of the gas."

The team included scientists from Instituto di Radioastronomia, the University of Bologna, the Smithsonian Astrophysical Observatory, the National Radio Astronomy Observatory, and the Naval Research Laboratory. Basic research in radio astronomy at the Naval Research Laboratory is supported by 6.1 base funding. The NRAO is a facility of the National Science Foundation operated under cooperative agreement by Associated Universities, Inc. The GMRT is run by the National Centre for Radio Astrophysics of the Tata Institute of Fundamental Research. The LWA, funding for which is provided by the Office of Naval Research, is led by the University of New Mexico, and includes NRL, The Applied Research Laboratory at the University of Texas at Austin, Virginia Tech, the Los Alamos National Laboratory, and the University of Iowa, with contributions and cooperation from NRAO.

Adapted from materials provided by Naval Research Laboratory, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2008/10/081015144157.htm

Turf Wars: Sand And Corals Don't Mix

Hate sand in your sandwich? Even this parrotfish (Scarus rivulatus) prefers food without sand. (Credit: Photo: Joao Paulo Krajewski)

ScienceDaily (Oct. 18, 2008) — When reef fish get a mouthful of sand, coral reefs can drown.

That's the latest startling evidence to emerge from research into the likely fate of reefs under climate change and rising sea levels, at the ARC Centre of Excellence for Coral Reef Studies (CoECRS).

"We've known for a while that having a lot of sediment in the water is bad for corals and can smother them. What we didn't realize is how permanent this state of affairs can become, to the point where it may prevent the corals ever re-establishing," says Professor David Bellwood of CoECRS and James Cook University.

The killer blow for a degraded coral reef is a thick mat of sand and weeds that shrouds the rocky surfaces on which the corals would normally grow, preventing them from re-establishing. This gritty algal 'turf' has shown itself to be remarkably hardy and, once in place, makes it almost impossible for the corals to return.

If sea levels rise, then the smothered reef 'drowns' and never recovers, Prof, Bellwood says. "We know this from geological history, at the time of previous sea level rises. The reason we are doing the work is to see whether or not coral reefs will be able to keep up with rising sea levels under climate change."

But Prof. Bellwood and colleague Dr Chris Fulton from the Australian National University have also uncovered a remarkable link in the chain which explains why the algal turf can win in its 'turf war' with the corals.

When the water is thick with sediment and it settles on the seaweeds, herbivorous reef fish turn up their noses at the gritty food, much as humans disdain a sandwich that has been dropped on a sandy beach.

"Remarkably we found that when there is little sediment around and plenty of fish, the fish 'mowed' the weeds very fast, eating two thirds of their length in about 4 hours. This action by fish in keeping the algal turf down gives the corals a chance to re-establish" said Dr Fulton.

"But if there is a lot of sediment in the water, the fish go off their feed, the weeds grow, more sand settles – and the murky shroud that smothers the reef becomes more stable, often permanent. Then, when sea levels rise, the reef drowns."

Prof. Bellwood says that in many cases the sediment is generated naturally by the reef itself, particles are swept into its back lagoon and then stirred up by wind, tide and wave to settle on the turf-covered flats. "In those cases it is almost like the reef defecating onto itself," he adds.

In other cases the sediment is released from the land, often as a result of human activity such as farming, grazing, land clearing or construction.

In either case, if there is enough sediment in the water to settle on the seaweed, it turns the weed-eating fish off their meal. "We're not entirely sure why this is - it may be that the sediment acts as an antacid and gives the fish indigestion by preventing their stomach acids digesting their food. Or it may simply be that fish, like people, don't appreciate a mouthful of sand and mud."

There is not a lot that humans can do to disrupt the natural processes that cause reefs to smother under stable algal turfs, then drown as sea levels rise, Prof. Bellwood says.

However, he adds, there is plenty we can do to reduce our own impact on the process by checking the flow of erosion off the land onto coral reefs, and by ensuring that populations of weed-eating fish are maintained at levels high enough to control the weeds - and give the corals an even chance of making a comeback.

Adapted from materials provided by ARC Centre of Excellence in Coral Reef Studies.

http://www.sciencedaily.com/releases/2008/10/081008095708.htm

Optics Of Alzheimer's Disease

ScienceDaily (Oct. 18, 2008) — One of the hallmarks of Alzheimer's disease is the formation of plaques made of protein aggregates in the brain tissue. There is still considerable debate among scientists as to whether these plaques are the cause of the neuronal death that occurs in Alzheimer's or just a by-product of the disease, however.

In the last decade, autopsies have revealed that people with the worst dementia often don't have the worst plaques, and clots and hemorrhages in small blood vessels have also been implicated in the disease.

New optical techniques may allow the link between altered blood flow and Alzheimer's disease to be studied further by enabling scientists to directly look at the effect of clots in the brain's microvasculature on the development of Alzheimer's. Chris Schaffer and his colleagues at Cornell University use tightly focused femtosecond lasers to introduce clots in the microvasculature in the brains of rodents. The laser cuts open the cells lining the blood vessels, triggering natural clotting mechanisms and leading to the formation of an occlusion. The clotting process, as well as the subsequent changes in the brain, can be followed with fluorescence microscopy.

Schaffer and his colleagues are looking at whether putting tiny clots in the microvasculature can exacerbate Alzheimer's disease. Using transgenic mice that are predisposed to developing early-onset Alzheimer's disease, they have already shown that clotting a microvessel triggers the formation of new protein plaques. Next they plan to systematically study the effect of these clots on the cognitive decline of the Alzheimer's mice.

Medical research is a cornerstone of Frontiers in Optics 2008 (FiO), the 92nd Annual Meeting of the Optical Society (OSA), being held Oct. 19-23 at the Riverside Convention Center in Rochester, N.Y. FiO 2008 will take place alongside Laser Science XXIV, the annual meeting of the American Physical Society's Division of Laser Science. The presentation FTuE4, "Femtosecond Laser-Induced Microvascular Clots Trigger Alzheimer's Disease Pathology."

Adapted from materials provided by Optical Society of America.

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Spallation Neutron Source Sends First Neutrons To 'Big Bang' Beam Line

While most of the instruments at the Spallation Neutron Source are dedicated to materials and condensed-matter studies, the Fundamental Neutron Physics Beam Line will explore questions in nuclear physics. (Credit: Image courtesy of DOE/Oak Ridge National Laboratory)

ScienceDaily (Oct. 18, 2008) — New analytical tools coming on line at the Spallation Neutron Source, the Department of Energy's state-of-the-art neutron science facility at Oak Ridge National Laboratory, include a beam line dedicated to nuclear physics studies.

The Fundamental Neutron Physics Beam Line (FNPB) has opened its shutter to receive neutrons for the first time. Among the nuclear physics studies planned for the new, intense beam line are experiments that probe the neutron-related mysteries associated with the "Big Bang."

"Completion of the Fundamental Neutron Physics Beam Line marks a significant step in the SNS's ramp up to full power, building up to its eventual suite of 25 instruments for neutron analysis," said ORNL Director Thom Mason, who led the SNS construction project to its completion. "The nuclear physics community is excited to have this new tool for exploring theories of the origins of the universe."

Although research at most of the current and future operating SNS beam lines is directed towards condensed matter and materials research, research at the FNPB is focused on basic studies in nuclear physics.

"While other beam lines use neutrons as a probe to study materials, the object for much of the work proposed at the FNPB is the study of the neutron itself," said University of Tennessee Professor Geoffrey Greene, who holds a Joint Faculty Appointment with ORNL and who leads the FNPB project. "Among

the questions that will be addressed at the FNPB are the details of the internal structure of the neutron as well as a careful study of the way in which the free neutron decays. Such experiments have important implication for fundamental questions in particle physics and cosmology."

Greene explained that neutrons, which have no electric charge, may nevertheless have a slight displacement between internal positive and negative charges. The existence of such a "neutron electric dipole moment" could shed light on what happened in the early phases of the Big Bang. In particular it could help to explain why the universe appears to be made entirely of matter without any antimatter, he said.

While the neutron is stable in most nuclei, when it is liberated (for example in an SNS neutron beam) it lives for only about 10 minutes. "Precise measurements of the neutron lifetime help clarify the distribution of chemical elements generated in the first few minutes of the Big Bang and shed light on the amount of normal matter—as opposed to dark matter and dark energy—in the universe," Greene said.

"Another set of extremely precise studies at the FNPB will address the interaction between neutrons and simple nuclei and may help to explain universal 'parity' violation," Greene said. "Roughly speaking, parity is the symmetry that implies that the laws of physics are invariant when 'viewed in a mirror.' The surprising fact is, at a basic level, the universe appears to be 'left-handed.'

"The challenge remains to understand why this puzzling state of affairs exists," he said.

Greene noted that the theoretical basis for such symmetry violation --first outlined several decades ago-- was recognized earlier this month with the 2008 Nobel Prize to Yoichiro Nambu.

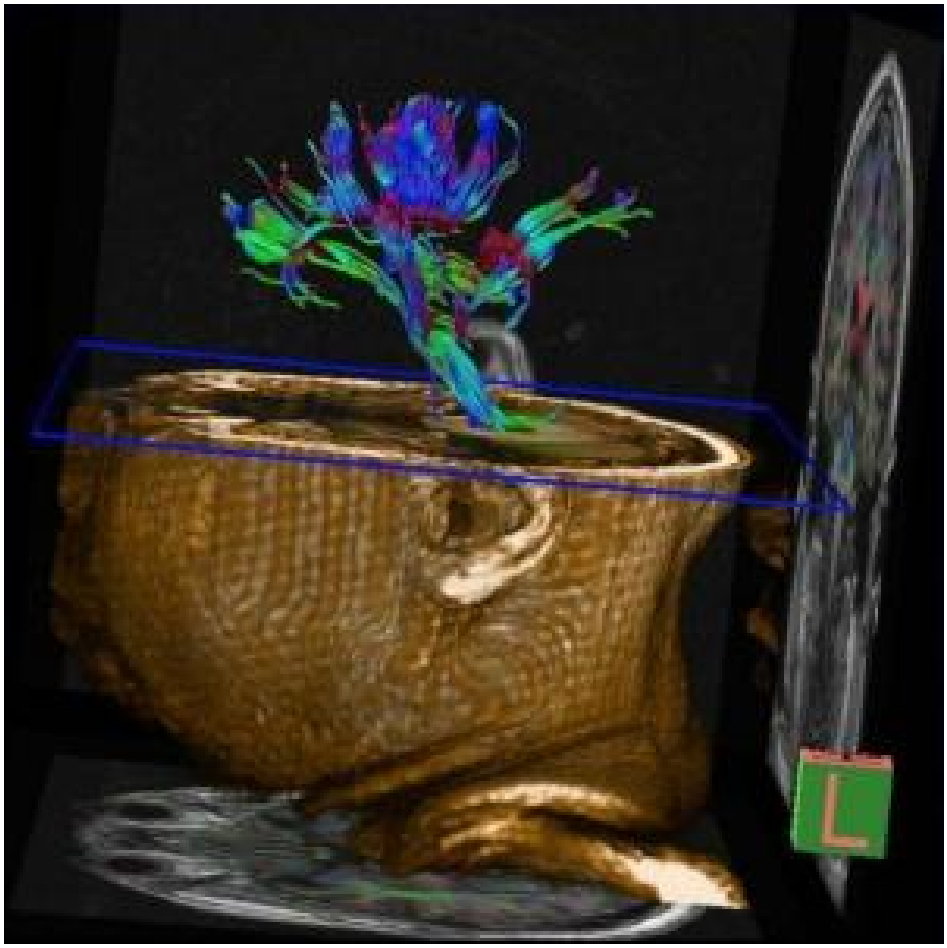
The FNPB is funded by the DOE Office of Science's Office of Nuclear Physics.

ORNL is managed by UT-Battelle for the Department of Energy.

Adapted from materials provided by DOE/Oak Ridge National Laboratory.

http://www.sciencedaily.com/releases/2008/10/081009144321.htm

Physical Decline Caused By Slow Decay Of Brain's Myelin



In this cross-section of a human head, the green fibers represent myelin-sheathed axons traveling from the cortex through the brain and down the spine. (Credit: Image courtesy of UCLA)

ScienceDaily (Oct. 18, 2008) — During this year's baseball playoffs, Chicago White Sox outfielder Ken Griffey Jr., 38, threw a picture-perfect strike from center field to home plate to stop an opposing player from scoring. The White Sox ultimately won the game by a single run and clinched the division title.

Had Griffey been 40, it could be argued, he might not have made the throw in time. That's because in middle age, we begin to lose myelin — the fatty sheath of "insulation" that coats our nerve axons and allows for fast signaling bursts in our brains.

Reporting in the online version of the journal Neurobiology of Aging, Dr. George Bartzokis, professor of psychiatry at the UCLA Semel Institute for Neuroscience and Human Behavior at UCLA, and his colleagues compared how quickly a group of males ranging in age from 23 to 80 could perform a motor task and then correlated their performances to their brains' myelin integrity. The researchers found a striking correlation between the speed of the task and the integrity of myelination over the range of ages. Put another way, after middle age, we start to lose the battle to repair the myelin in our brain, and our motor and cognitive functions begin a long, slow downhill slide.

The myelination of brain circuits follows an inverted U-shaped trajectory, peaking in middle age. Bartzokis and others have long argued that brain aging may be primarily related to the process of myelin breakdown.

"Studies have shown us that as we age, myelin breakdown and repair is continually occurring over the brain's entire 'neural network,'" said Bartzokis, who is also a member of UCLA's Ahmanson–Lovelace Brain Mapping Center and the UCLA Laboratory of Neuro Imaging. "But in older age, we begin losing the repair battle. That means the average performance of the networks gradually declines with age at an accelerating rate."

The researchers proposed that cognitive, sensory and motor processing speeds are all highly related to this decline. To test their hypothesis, they used one of the simplest and best understood tests of central nervous system processing speed: how fast an individual can tap their index finger.

It's well known that the speed of a movement increases with the frequency of neuronal action potential (AP) bursts in the brain. AP is an electrical discharge that travels over the axons connecting nerves, whether it's Ken Griffey Jr.'s brain ordering his arm to throw or the brain telling a finger to tap. Fast movements require high-frequency AP bursts that depend on excellent myelin integrity over the entire axon network involved in controlling that movement.

In the study, each of the 72 participants had a magnetic resonance imaging (MRI) scan that measured the myelin integrity in the vulnerable wiring of their brain's frontal lobes. The maximum finger-tapping speed (the number of taps over a period of 10 seconds) was measured just before the MRI measure was obtained.

The results supported what the researcher had suspected, that finger-tapping speed and myelin integrity measurements were correlated and "had lifespan trajectories that were virtually indistinguishable," according to Bartzokis. And yes, they both peaked at 39 years of age and declined with an accelerating trajectory thereafter.

Bartzokis said these observations are consistent with the hypothesis that "maximum motor speeds depend upon high frequency AP bursts that, in turn, depend on the myelin integrity of the neural networks involved in the task."

"Beginning in middle age," he said, "the process of age-related myelin breakdown slowly erodes myelin's ability to support the very highest frequency AP bursts. That may well be why, besides achy joints and arthritis, even the fittest athletes retire and all older people move slower than they did when they were younger."

"The results are pretty striking," Bartzokis said. "The nearly identical trajectory across the lifespan for both measures of myelin integrity and fine motor speed supports the notion that myelin health underlies maximum AP burst frequency."

Significantly, the research suggests that the myelin breakdown process should also reduce all other brain functions for which performance speed is dependent on higher AP frequencies, including memory; it also supports the suggestion that myelin breakdown is a biological process of aging underlying the erosion of physical skills and cognitive decline, including the onset of such age-driven disorders as Alzheimer's disease.

There is, however, some good news, according to Bartzokis.

"Since in healthy individuals brain myelin breakdown begins to occur in middle age, there is a decades-long period during which therapeutic interventions could alter the course of brain aging and possibly

delay age-driven degenerative brain disorders such as Alzheimer's," he said. "Non-invasive, serial evaluations of myelin integrity could be used to monitor the effects of new and current treatments that may slow the process of myelin breakdown as early as midlife."

Other authors of the study included Po H. Lu, Kathleen Tingus, Mario F. Mendez, Aurore Richard, Douglas G. Peters, Bolanle Oluwadara, Katherine A. Barrall, J. Paul Finn, Pablo Villablanca, Paul M. Thompson, and Jim Mintz. The authors report no conflict of interest.

The study was supported by the National Institutes of Health, the RCS Alzheimer's Foundation, Sidell-Kagan Foundation; and the U.S. Department of Veterans Affairs.

Adapted from materials provided by University of California - Los Angeles.

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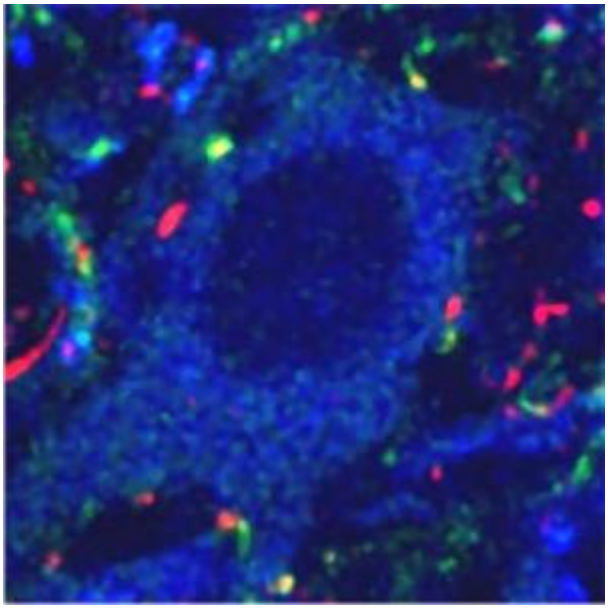
Fine Balance: Class Of Spinal Cord Neurons Makes Sure That Sides Of Body Don't Get Ahead Of One Other



V3 neurons (shown in green) relay signals from the nerve cells in the spinal cord to motor neurons (shown in blue), which cause muscles to contract (points of contact shown in yellow). In addition to establishing a balance between both sides of the body, V3 neurons ensure that the stepping rhythm is robust and well-organized. (Credit: Courtesy of Dr.Ying Zhang, Salk Institute for Biological Studies)

ScienceDaily (Oct. 18, 2008) — Once a toddler has mastered the art of walking, it seems to come naturally for the rest of her life. But walking and running require a high degree of coordination between the left and right sides of the body. Now researchers at the Salk Institute for Biological Studies have shown how a class of spinal cord neurons, known as V3 neurons, makes sure that one side of the body doesn't get ahead of the other.

The findings, published in the Oct. 9 issue of Neuron, mark an important milestone in understanding the neural circuitry that coordinates walking movements, one of the main obstacles in developing new treatments for spinal cord injuries. In addition to establishing a balance between both sides of the body, they found that the V3 neurons ensure that the stepping rhythm is robust and well-organized.

"In the case of cervical spinal cord injuries, the spinal network that drives your limbs and allows you to walk is still there but no longer receives appropriate activating inputs from the brain." says Martyn Goulding, Ph.D., a professor in the Molecular Neurobiology Laboratory, who led the study. "The fact that the V3 neurons are important for generating a robust locomotor rhythm makes them good candidates for efforts aimed at therapeutic intervention after spinal cord injury."

V3 neurons are so called interneurons, which relay signals from the nerve cells in the spinal cord to motor neurons, which cause muscles to contract. Spinal interneurons form complex networks—commonly referred to as CPGs, short for central pattern generators—that function as local control and command centers for rhythmic movements, which lie at the heart of all locomotion.

Although scientists had known about the locomotor CPG for a long time, they were unable to identify the nerve cells that make up these circuits. When Goulding and others began to break the molecular code that

makes these different interneuron cell types, they could start to unravel the wiring of the spinal cord to see how it works.

Neurons in the brain and spinal cord come in two flavors, excitatory neurons that transmit and amplify signals and inhibitory neurons that inhibit and refine those signals. Previously, Goulding and his team discovered that a subset of inhibitory interneurons, the V1 neurons, control the speed of motor rhythm and thus set the pace at which animals walk, while a second group of inhibitory neurons, called V0 neurons, govern the left-right alternating pattern of activity that is needed for stepping, as opposed to hopping, movements. In their latest study, they turned their attention to a class of excitatory neurons, the so-called V3 neurons.

"Most models of the CPG include an inhibitory element that switches off motor neuron activity on one side in order to initiate the next step on the other side of the body, which allows you to walk, hop, skip, and run," says Goulding. "V3 neurons provide an additional level of control, which makes sure that when you walk and run, the intensity of the activity is matched on both sides of the body. If that were not the case, we would be unable to walk or run along a straight line."

In the study, postdoctoral researchers in the Goulding lab genetically engineered mice to specifically shut off their V3 neurons and reveal their function. The first author, Ying Zhang, Ph.D., then performed electrophysiological experiments on spinal cords isolated from these mice and found that without functioning V3 neurons, the length of individual motor neuron bursts began to fluctuate wildly. "Instead of a stable, alternating pattern, we found irregular oscillations between the left and the right side," she says.

"A lot of research focused on the left-right coordination, but it has became clear that different levels of control allow for the fine-tuning of these rhythmic locomotor patterns," says Zhang. "This study will allow us to put together a map of the neurons contributing to the CPG so that we can think about manipulating the CPG for therapeutic purposes."

Since the activity of the motor neurons determines how much the muscle contracts and for how long, the researchers wanted to know how this irregular activity pattern of motor neurons influences the gait of mice strolling down a walkway. Taking advantage of the so-called AlstR/AL system, which was developed by Salk researcher Edward M. Callaway, Ph.D., a professor in the Systems Neurobiology Laboratories, the researchers temporarily shut off V3 neurons in adult mice and sent them on their way along a narrow Plexiglas walkway. While the mice still alternated steps with their left and right hind limbs, the length of each step varied markedly, making it difficult for them to walk with a smooth cadence.

Researchers in the Goulding laboratory who contributed to this work include Sujatha Narayan, Ph.D., Eric Geiman, Ph.D., Guillermo M. Lanuza, Ph.D., Tomoko Velasquez, Ph.D., and Simon Gosgnach, Ph.D., who is currently an assistant professor at the University of Alberta, Edmonton, Canada. Turgay Akay, Ph.D., Jason Dyck, and Keir Pearson, Ph.D., a professor at the University of Alberta, Edmonton, Canada, as well as Chen-Ming Fan, Ph.D., a primary investigator at the Carnegie Institution of Washington, Baltimore, were also involved in this study.

The research was supported by grants from the NIH and the Human Frontiers Science Program.

Adapted from materials provided by Salk Institute.

http://www.sciencedaily.com/releases/2008/10/081008150449.htm

Wildfires Cause Ozone Pollution To Violate Health Standards, New Study Shows

Wildfires, such as this blaze in western Canada last summer, can create unhealthy levels of ozone pollution. (Credit: Photo by Cameron S. McNaughton)

ScienceDaily (Oct. 18, 2008) — Wildfires can boost ozone pollution to levels that violate U.S. health standards, a new study concludes. The research, by scientists at the National Center for Atmospheric Research (NCAR), focused on California wildfires in 2007, finding that they repeatedly caused ground-level ozone to spike to unhealthy levels across a broad area, including much of rural California as well as neighboring Nevada.

The study was published today in Geophysical Research Letters. It was funded by NASA and by the National Science Foundation, which sponsors NCAR.

"It's important to understand the health impacts of wildfires," says NCAR scientist Gabriele Pfister, the lead author. "Ozone can hit unhealthy levels even in places where people don't see smoke."

Although scientists have long known that wildfires can affect air quality by emitting particles and gases into the air, there has been little research to quantify the impacts. Fires worsen ozone levels by releasing nitrogen oxides and hydrocarbons, which can form ozone near the fire or far downwind as a result of chemical reactions in sunlight.

The researchers, using a combination of computer models and ground-level measurements, studied intense California wildfires that broke out in September and October of 2007. They found that ozone was three times more likely to violate safe levels when fire plumes blew into a region than when no plumes were present.

At the time of the wildfires, the public health standard for ozone set by the Environmental Protection Agency (EPA) was 0.08 parts per million over an eight-hour period. The EPA has since tightened the standard to 0.075 parts per million. Under the stricter standard, the number of violations would have nearly doubled.

While ozone in the stratosphere benefits life on Earth by blocking ultraviolet radiation from the Sun, ozone in the lower atmosphere can trigger a number of health problems. These range from coughing and throat irritation to more serious problems, such as aggravation of asthma, bronchitis, and emphysema. Ground-level ozone pollution also damages crops and other plants.

"Wildfires are expected to worsen in the future, especially as our climate grows warmer," Pfister says. "But we are only now beginning to understand their potential impacts on people and ecosystems, not only nearby but also potentially far downwind."

Rural impacts

The unhealthy levels of ozone the researchers detected occurred mostly in rural areas. This finding may be a result of the computer modeling, which lacked the fine detail to zoom in on relatively compact urban areas. However, the authors also speculate that wildfire emissions have a greater impact on ozone levels in the countryside than on cities. The reason has to do with chemistry. Cities tend to have more nitrogen dioxide, a pollutant that can, at high levels, reduce the efficiency with which ozone is produced or even destroy ozone.

"The impact of wildfires on ozone in suburban and rural areas, far from urban sources of pollution, was quite noticeable," says NCAR scientist Christine Wiedinmyer, a co-author of the paper.

The paper notes that ozone levels would likely have been even greater except that Santa Ana winds in October blew wildfire plumes over the Pacific Ocean, safely away from populated areas.

Tracking the emissions

To measure the impact of the fires on ozone formation, the researchers turned to a pair of computer models developed at NCAR. With the first one, a specialized fire model, they estimated the amount of vegetation burned and resulting emissions of nitrous oxides, sulfur dioxide, and other pollutants. Those results went into a global air chemistry model that simulated the movement of the emissions and evolving chemistry and tracked the resulting formation of ozone as the fire plumes spread downwind.

The scientists compared their modeling results with ozone measurements from a network of EPA ground stations at various sites in California. This enabled them to determine both the number of ozone violations and the extent to which the wildfires contributed to those violations. It also enabled them to verify the accuracy of the model.

Adapted from materials provided by National Center for Atmospheric Research/University Corporation for Atmospheric Research.

http://www.sciencedaily.com/releases/2008/10/081009144115.htm

Smell Of Smoke Does Not Trigger Relapse In Quitters, New Research Shows

ScienceDaily (Oct. 18, 2008) — Research into tobacco dependence published in the November issue of Addiction, has shown that recent ex-smokers who find exposure to other people's cigarette smoke pleasant are not any more likely to relapse than those who find it unpleasant.

Led by Dr Hayden McRobbie and Professor Peter Hajek of the Tobacco Dependence Research Unit at Barts and The London School of Medicine and Dentistry, researchers examined the hypothesis that those who find the smell of smoke pleasant are more likely to relapse than those who have a neutral or negative reaction to it. Surprisingly, they concluded that finding the smell of other people's cigarettes pleasant does not make abstaining smokers any more likely to relapse.

The researchers studied a group of over a thousand smokers receiving smoking cessation treatment at the East London Smokers Clinic. During their six weeks of treatment (two weeks prior to quitting and four weeks afterwards) the smokers completed a weekly questionnaire that measured the severity of their withdrawal discomfort, and also asked them to rate how pleasant they found the smell of other people's cigarettes during the past week.

The results showed that during their first week of abstinence, 23 per cent of respondents found the smell of other people's cigarette smoke pleasant. Finding the cigarette smoke pleasant was not related to smoking status in the following week.

Lead author Dr Hayden McRobbie says, "Recent quitters can be reassured that finding the smell of cigarette smoke pleasant is not likely to lead them back to smoking."

Journal reference:

1. McRobbie H, Hajek P, Locker J. **Does the reaction of abstaining smokers to the smell of other people's cigarettes predict relapse?** *Addiction*, 2008; 103 (11): 1883 DOI: 10.1111/j.1360-0443.2008.02340.x

Adapted from materials provided by Queen Mary, University of London, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2008/10/081017103638.htm

African chimps decline 'alarming'

The population of the endangered West African chimpanzees in Ivory Coast has fallen by about 90% in less than 20 years, a study has suggested.

Researchers found 90% fewer nests than a similar audit carried out in 1990, which suggested the chimp population had crashed from 12,000 to about 1,200.

Increased levels of deforestation and poaching and were likely to be main factors for the decline, they added.

Details of the survey's findings appear in the journal Current Biology.

Ivory Coast, thought to be one of the last strongholds for the species (*Pan troglodytes verus*), was believed to be home to between 8,000 and 12,000 individuals.

This estimate was primarily based on a nationwide survey carried out in 1989 and 1990.

Dramatic decline

When scientists carried out the most recent count in 2007, using the same techniques as the 1990 audit, they discovered a very different situation.

> **If we want to be serious about conservation, the international community needs to invest in conservation and has to invest in a sustainable way**
> Christophe Boesch, Max Planck Institute for Evolutionary Anthropology

"Our results show that there has been an alarming decline in chimpanzee numbers, and that urgent action is required to prevent them disappearing entirely," the team wrote.

The researchers revisited 11 sites that had been surveyed 17 years earlier.

"The dramatic result was that in most areas where we had found chimpanzees (in 1990), there were now none left," said co-author Christophe Boesch, who was also involved in the earlier survey.

"We were expecting a decrease but not such a dramatic one," he told the BBC.

Professor Boesch, a director at the Max Planck Institute for Evolutionary Anthropology, Germany, said poaching and deforestation were on the increase as a result of the nation's rapidly growing human population.

The number of people living in Ivory Coast is now estimated to be 18m, up from 12m in 1990.

"The forest has been cut back in order to grow cash crops and other things," he explained.

"Also, chimpanzees, like many other species, are hunted for their meat. In some regions, including West Africa, something called 'empty forest syndrome' has been recorded.

"This is where the forest itself is still intact but it has been emptied by hunting."

The researchers said that there was a link between increases in human populations and higher rates of poaching and deforestation.

They added that the civil unrest in the nation since 2002 was likely to have exacerbated the problems.

But Professor Boesch said that there was one glimmer of hope in the otherwise bleak findings.

One of the sites was located within the boundaries of Tai National Park, where the local population of chimps had fared much better.

"What differentiated this population from the others is that it is located within a national park, which means it is fully protected from poaching," he explained.

"Secondly, during the country's period of civil unrest, the park was supported by international conservation projects."

He added that the combination of the two pointed to a potential way to protect the long-term survival of the species.

"If we want to be serious about conservation, the international community needs to invest in conservation and has to invest in a sustainable way."

But he added that if a global conservation effort was not forthcoming, then the prognosis was grim.

"Our closest living relative will not survive, and I ask myself about what this means for the future of humans if we let this species disappear."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/7673914.stm

Published: 2008/10/17 15:34:22 GMT

Handsets to become crime targets

The risk of spam and viruses that attack mobile devices is set to rise, says a report.

Security experts suggest current risks are small, and that attacks will take the same form as PC spam and scams.

End-user protection like anti-virus software is not yet mature in the mobile market, so the issue is being addressed by the network operators.

Mobile users are urged to employ the same safe behaviours familiar from PCs to reduce risks.

New threat

The annual Emerging Cyber Threats Report from the Georgia Institute of Technology Information Security Center (GTISC) in the US has identified mobile devices as particularly vulnerable platform.

It said that as more and more people adopt smartphones, more applications will allow financial and payment infrastructure that employs them, and the availability of such sensitive data will prove to be a draw for cybercriminals.

The growth of mobile spam and viruses has been reminiscent of the early days of PC spam and scam, says Simeon Coney of Adaptive Mobile, a firm that tracks malware and provides security software for mobile firms.

"One of common types we see now runs amok on the Symbian platform," Mr Coney told BBC News. "These viruses work their way through the contact book, sending themselves out to every subscriber who has been called or has called that handset."

Mr Coney says that network operators receive 100,000 virus incidences a day, nearly a 50% rise on last year. However, most subscribers are not infected - in part because mobile viruses are comparatively unsophisticated at present.

"The first generation of these were fairly easy for mobile operators to detect," Mr Coney said.

"Just like the first PC viruses came across as screensavers, in the mobile instance they came across as executable files. No-one was ever sending executable files themselves so it was easy to detect and block that.

"But in the last four months, the majority of viruses we now see are of a new type that either masquerade as an MP3 file, a picture file, or a media file."

People should start to exercise that same caution with their mobile devices that they do today on their PC
Simeon Coney, Adaptive Mobile

Adaptive Mobile has identified one particular virus called Beselo that spreads via MMS or by searching for nearby Bluetooth devices - a true "airborne virus".

For a typical network operator, they find, the virus is responsible for a rise in spam from 0.5% of traffic to 6% over the last 12 months.

The simple solution for users, Mr Coney says, is to employ the same behaviours familiar from computing.

"People should start to exercise that same caution with their mobile devices that they do today on their PC; think twice before running any attachment from someone you don't know, check your bill on a regular basis, and ensure your Bluetooth connection is not set in discoverable mode.

Mikko Hypponen, chief research officer at F-Secure, said statistics it had gathered about mobile viruses suggested there were about 400 in circulation.

"The growth rate is slowing," he says. "This is because the mobile vendors are awake and are installing better built-in security in their new phone models."

"We haven't seen much mobile malware that would use exploits to target vulnerabilities on mobile phones to gain access," he adds. "Almost all of them instead rely on users installing the malware themselves. This could change."

'Missed opportunity'

Up to now, mobile security has largely been in the hands of the network operators, who have taken a very pro-active stance to security for their users.

But the report instead suggests that co-operation between operators, manufacturers and application developers will be necessary.

The report lauds open-source mobile operating systems like Google's Android, which will make it easier for application developers to develop robust security.

The average life-cycle of mobile devices is just two years - compared to 10 years for a PC - so developing security infrastructure for mobiles will happen quickly.

"Because the mobile communications field is evolving so quickly, it presents a unique opportunity to design security properly - an opportunity we missed with the PC," says the GTISC's Patrick Traynor in the report.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/technology/7675882.stm

Published: 2008/10/17 11:41:04 GMT

Obesity 'lifts inflammation risk'

Obesity and lack of fitness raise the risk of illness by impacting negatively on the body's internal chemistry, research suggests.

A US team found levels of white blood cells were highest in men who were unfit and overweight.

White blood cells are key to fighting infection, but high levels can be a sign of inflammation, which is linked to coronary heart disease.

The study appears in the British Journal of Sports Medicine.

> **There is nothing worse than a risk factor that an individual cannot modify, but here are two risk factors - obesity and fitness - which they can do something about**
> Professor Tim Church
> Pennington Biomedical Research Center

A team from the Pennington Biomedical Research Center carried out tests on 452 healthy men who were taking part in a long-term study of fitness.

Blood tests were taken, and analysed for their content of various types of white blood cell.

After taking account of age, the researchers found that all groups of white blood cell were lowest in the men who were most physically fit.

The greater proportion of body fat a man had, the higher his white blood cell count was.

Total white cell count was highest in men who had a combination of higher body fat and lower levels of physical fitness.

Levels were also high among men with lower body weight but lower levels of fitness.

However, a high degree of physical fitness negated the effect of extra body fat.

Key role

White cell counts tend to rise after a bout of vigorous exercise, but the researchers said regular exercise might condition the body to respond more efficiently to the physical demands made of it.

Lead researcher Professor Tim Church said it was clear that inflammation played a key role in heart disease and other illnesses, but the factors which drove it were still relatively unclear.

He said: "There is nothing worse than a risk factor that an individual cannot modify, but here are two risk factors - obesity and fitness - which they can do something about."

June Davison, cardiac nurse at the British Heart Foundation, said: "These findings add to evidence that regular physical activity and keeping close to a healthy weight have huge benefits for your heart health."

And John Brewer, performance director at the Lucozade Sport Science Academy in Slough, stressed that an unhealthy lifestyle posed "real dangers" to health.

He said: "Whilst studies like this one, and initiatives from the government and health-promotion agencies, can raise awareness of the risks, ultimately it is down to individuals to chose a lifestyle and habits that give them the best chance of leading a healthy, active life."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/7669966.stm

Published: 2008/10/17 23:06:54 GMT

Dirty equipment 'poses op danger'

One in four hospital trusts in England is failing to meet national standards on the cleanliness of surgical equipment, a watchdog has reported.

The Healthcare Commission found that the number of trusts with satisfactory decontamination standards fell by 7% last year.

Specialists said the failure put patients at higher risk of infection.

The Department of Health said it was working with trusts and decontamination companies to improve matters.

> **Failure to reach these standards puts patients at risk, and if this downward spiral continues the repercussions for patients care could be severe**
> Diane Gilmour
> Association for Perioperative Practice

Many types of surgical equipment, such as scalpels, can be reused over and over again, but must be completely cleaned then sterilised before the next patient.

The Healthcare Commission standard states that trusts should ensure that proper decontamination is happening, and that risks are "well managed".

This means they need the right procedures and facilities in place to minimise the risk of unsterilised equipment reaching the patient.

Under the Healthcheck scheme, trusts declare whether they are meeting the standard, producing paperwork to support this, and one in five are then inspected by the commission to make sure.

Last year, 77.3% of trusts said they were meeting the standards, compared with 84.8% the previous year.

The Association for Perioperative Practice, which works to improve the standard of care offered during and after operations, said these were the worst results since the Healthcare Commission's new "NHS Healthcheck" was launched.

It said that moves which meant fewer hospitals carried out their own decontamination, sending the work to "supercentres" catering for many different hospitals, could be contributing to the low quality.

Registration threat

Diane Gilmour, from the association, said the results were "extremely concerning".

"Of all the core standards examined by the Healthcare Commission, this is by some way the poorest performance.

"Failure to reach these standards puts patients at risk, and if this downward spiral continues the repercussions for patients care could be severe."

A spokesman for the Healthcare Commission it was "concerned" by the performance of some trusts.

"This decline could be because trusts are now much more aware of what they need to do to meet best practice.

"This involves decontamination away from treatment and clinical areas and preferably in an accredited specialised facility or at least in a dedicated room meeting essential requirements.

"From April next year, every NHS trust will need to comply with requirements on infection control in order to be registered with the new Care Quality Commission.

"The results of the annual health check show that some trusts need to strengthen their systems before they can be confident they will meet requirements of registration."

A spokesman for the Department of Health said it was addressing the issue.

"We have invested over £200 million in improving decontamination services in the NHS in England since 2001 and we will continue to support Trusts to provide the highest standards of decontamination of instruments as part of their drive against healthcare associated infection.

"We are helping PCTs to draw up a local action plans where necessary and we are working closely with both them and the private sector provider to resolve any issues."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/7676985.stm

Published: 2008/10/17 16:35:03 GMT

Emotion And Scent Create Lasting Memories -- Even In A Sleeping Brain

Researchers created memories in mice by stimulating the release of noradrenaline, a chemical present in the body during strong emotional events ranging from excitement to fear. (Credit: iStockphoto/Dan Brandenburg)

ScienceDaily (Oct. 17, 2008) — When French memoirist Marcel Proust dipped a pastry into his tea, the distinctive scent it produced suddenly opened the flood gates of his memory.

In a series of experiments with sleeping mice, researchers at the Duke University Medical Center have shown that the part of the brain that processes scents is indeed a key part of forming long-term memories, especially involving other individuals.

"We can all relate to the experience of walking into a room and smelling something that sparks a vivid, emotional memory about a family member from years or even decades ago," says Stephen Shea, Ph.D., the lead author of the study published in The Journal of Neuroscience. "This research sought to understand that phenomenon on a cellular level."

The researchers examined how strong memories are formed by creating new memories in the minds of mice while under sedation and monitoring their response to a memory-inducing stimulus afterwards, when they were awake.

"Our work is unique because it allows us to examine the cellular make-up of a memory, evaluate how the neurons change when a memory is formed and learn how that memory affects behavior," Shea adds.

The researchers created memories by stimulating the release of noradrenaline, a chemical present in the body during strong emotional events ranging from excitement to fear.

Previous studies have established a link between noradrenaline and the formation of enduring memories, especially during intense social events such as mating and childbirth. In mice and humans, the presence of noradrenaline also creates changes in the odor processing center of the brain, called the olfactory bulb.

"When an animal forms a strong memory about another, it is reliant on odor cues and noradrenaline. Both need to be present at the same time in order for the memory to be formed," Shea says. "Long-term memories created under these conditions often result in a permanent change in behavior."

The Duke team administered anesthesia to a mouse and stimulated the release of noradrenaline with an electrode while wafting the scent of either food or the urine of another mouse under the nose.

"We wanted to see if these two elements – noradrenaline and odor – present at the same time were the key ingredients needed in the recipe for creation of memory – this is a concept that had not been directly tested before this study," Shea says. "In essence, we recreated the chemical reaction that would occur when the mouse experiences a social event, such as giving birth," Shea says.

Researchers knew they could observe brain activity in more detail when the mouse was under anesthesia. If awake, the mouse would be forming memories from the surrounding environment. "When the animal is asleep, you can watch neurons in the brain rewire to store a memory and once awake see what the mouse learned even though it was asleep when the memory was created."

What they saw was an approximate 40 percent reduction in neuron activation after triggering the noradrenaline release – suggesting that a memory of the odor had been formed.

A day later, after the mouse was awake, the team observed changes in behavior in response to the scents, showing that they remembered the smells from when they were asleep.

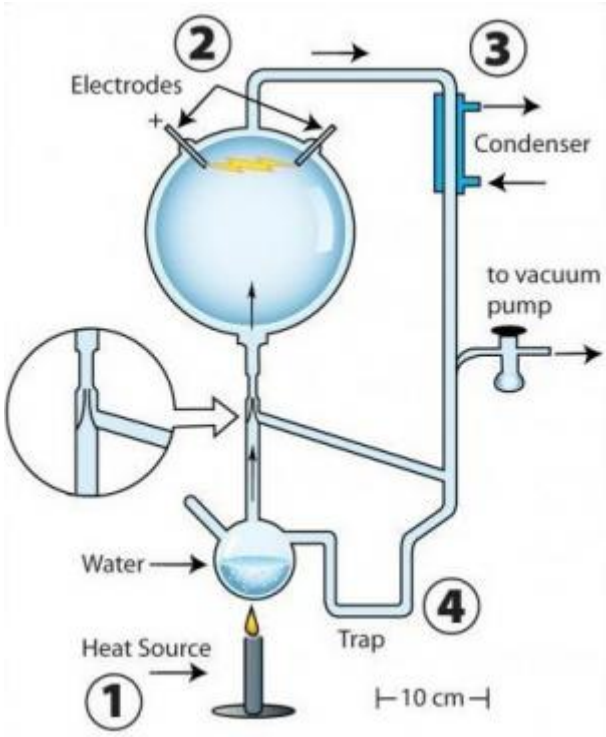
"This work may have implications for furthering our understanding of how long-lasting memories are formed that are important to social bonding," says Richard Mooney, Ph.D., co-author and associate professor of neurobiology.

The study was supported by grants from the National Institutes of Health. Drs. Shea and Mooney also would like to acknowledge the invaluable contributions of the late Dr. Lawrence C. Katz to this work.

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

http://www.sciencedaily.com/releases/2008/10/081016162242.htm

'Lost' Miller-Urey Experiment Created More Of Life's Building Blocks



The apparatus used for Miller's "second," initially unpublished experiment. Boiled water (1) creates airflow, driving steam and gases through a spark (2). A tapering of the glass apparatus (inlay) creates a spigot effect, increasing air flow. A cooling condenser (3) turns some steam back into liquid water, which drips down into the trap (4), where chemical products also settle. (Credit: Ned Shaw, Indiana University)

ScienceDaily (Oct. 17, 2008) — A classic experiment proving amino acids are created when inorganic molecules are exposed to electricity isn't the whole story, it turns out. The 1953 Miller-Urey Synthesis had two sibling studies, neither of which was published. Vials containing the products from those experiments were recently recovered and reanalyzed using modern technology. The results are reported in this week's Science.

One of the unpublished experiments by American chemist Stanley Miller (under his University of Chicago mentor, Nobelist Harold Urey) actually produced a wider variety of organic molecules than the experiment that made Miller famous. The difference between the two experiments is small -- the unpublished experiment used a tapering glass "aspirator" that simply increased air flow through a hollow, air-tight glass device. Increased air flow creates a more dynamic reaction vessel, or "vapor-rich volcanic" conditions, according to the present report's authors.

"The apparatus Stanley Miller paid the least attention to gave the most exciting results," said Adam Johnson, lead author of the Science report. "We suspect part of the reason for this was that he did not have the analytical tools we have today, so he would have missed a lot."

Johnson is a doctoral student in IU Bloomington's Biochemistry Program. His advisor is biogeochemist Lisa Pratt, professor of geological sciences and the director of NASA's Indiana-Princeton-Tennessee Astrobiology Institute.

In his May 15, 1953, article in Science, "A Production of Amino Acids Under Possible Primitive Earth Conditions," Miller identified just five amino acids: aspartic acid, glycine, alpha-amino-butyric acid, and two versions of alanine. Aspartic acid, glycine and alanine are common constituents of natural proteins. Miller relied on a blotting technique to identify the organic molecules he'd created -- primitive laboratory conditions by today's standards. In a 1955 Journal of the American Chemical Society paper, Miller identified other compounds, such as carboxylic and hydroxy acids. But he would not have been able to identify anything present at very low levels.

Johnson, Scripps Institution of Oceanography marine chemist Jeffrey Bada (the present Science paper's principal investigator), National Autonomous University of Mexico biologist Antonio Lazcano, Carnegie Institution of Washington chemist James Cleaves, and NASA Goddard Space Flight Center astrobiologists Jason Dworkin and Daniel Glavin examined vials left over from Miller's experiments of the early 1950s. Vials associated with the original, published experiment contained far more organic molecules than Stanley Miller realized -- 14 amino acids and five amines. The 11 vials scientists recovered from the unpublished aspirator experiment, however, produced 22 amino acids and the same five amines at yields comparable to the original experiment.

"We believed there was more to be learned from Miller's original experiment," Bada said. "We found that in comparison to his design everyone is familiar with from textbooks, the volcanic apparatus produces a wider variety of compounds."

Johnson added, "Many of these other amino acids have hydroxyl groups attached to them, meaning they'd be more reactive and more likely to create totally new molecules, given enough time."

The results of the revisited experiment delight but also perplex.

What is driving the second experiment's molecular diversity? And why didn't Miller publish the results of the second experiment?

A possible answer to the first question may be the increased flow rate itself, Johnson explained. "Removing newly formed molecules from the spark by increasing flow rate seems crucial," he said. "It's possible the jet of steam pushes newly synthesized molecules out of the spark discharge before additional reactions turn them into something less interesting. Another thought is that simply having more water present in the reaction allows a wider variety of reactions to occur."

An answer to the second question is relegated to speculation -- Miller, still a hero to many scientists, succumbed to a weak heart in 2007. Johnson says he and Bada suspect Miller wasn't impressed with the experiment two's results, instead opting to report the results of a simpler experiment to the editors at Science.

Miller's third, also unpublished, experiment used an apparatus that had an aspirator but used a "silent" discharge. This third device appears to have produced a lower diversity of organic molecules.

Research on early planetary geochemistry and the origins of life isn't limited to Earth studies. As humans explore the Solar System, investigations of past or present extra-terrestrial life are inevitable. Recent speculations have centered on Mars, whose polar areas are now known to possess water ice, but other candidates include Jupiter's moon Europa and Saturn's moon Enceladus, both of which are covered in water ice. The NASA Astrobiology Institute, which supports these investigations, has taken a keen interest in the revisiting of the Miller-Urey Synthesis.

"This research is both a link to the experimental foundations of astrobiology as well as an exciting result leading toward greater understanding of how life might have arisen on Earth," said Carl Pilcher, director

of the NASA Astrobiology Institute, headquartered at NASA Ames Research Center in Mountain View, Calif.

Henderson Cleaves (Carnegie Institution for Science) also contributed to the report. It was funded with grants from the NASA Astrobiology Institute, the Marine Biological Laboratory in Woods Hole, Mass., and Mexico's El Consejo Nacional de Ciencia y Tecnologia.

Journal reference:

1. Adam P. Johnson, H. James Cleaves, Jason P. Dworkin, Daniel P. Glavin, Antonio Lazcano, and Jeffrey L. Bada. **The Miller Volcanic Spark Discharge Experiment**. *Science*, Vol. 322, Issue 5900

Adapted from materials provided by Indiana University.

http://www.sciencedaily.com/releases/2008/10/081016141411.htm

Human Microbiome Consortium To Investigate Role Of Microbes In Human Health And Disease

ScienceDaily (Oct. 17, 2008) — Scientists from around the globe, meeting today in Heidelberg, Germany, announced the formation of the International Human Microbiome Consortium (IHMC), an effort that will enable researchers to characterize the relationship of the human microbiome in the maintenance of health and in disease.

The human microbiome is the collective genomes of all microorganisms living in or on the human body. The IHMC will generate a shared data resource from international projects that will be made freely available to the global scientific community. Research organizations from all nations supporting similar research efforts are invited to become participants.

In related news, leaders from the National Institutes of Health (NIH), part of the United States Department of Health and Human Services, signed a letter of intent in September with the European Commission (EC) officially agreeing to combine the data from the NIH Human Microbiome Project and the EC Metagenomics of the Human Intestinal Tract (MetaHIT) project. Both projects, which are already under way, will contribute an initial set of microbial genomes to the IHMC.

Current participants in the IHMP include:

- Australia : Commonwealth Scientific and Industrial Research Organization
- Canada : Canadian Institute of Health Research and Genome Canada
- China : Ministry Of Science and Technology
- Europe : European Commission
- United States : National Institutes of Health

The IHMC will be guided by a steering committee made up of one representative from each country's research funding agency, as well as a representative from each scientific project. The steering committee is charged with maintaining standards related to quality assurance of data, coordination of microbial strains for complete genome sequencing projects, data access and release and informed consent, in addition to other issues which need the committee's input.

The IHMC is open for membership from any researchers who agree to the consortium's principles, which include:

- open, free and rapid data release in accordance with donor consent forms
- common quality standards for data
- sharing of protocols and informed consent documents
- sharing of information about progress of each project
- a common publication policy

Trillions of microorganisms live in and on the human body. Scientists have recently begun sequencing the DNA of microbial communities to learn how microbes can help maintain our health or contribute to disease. For instance, research has suggested that fluctuations in the composition of microbial communities contribute to diabetes, asthma, obesity and a variety of digestive disorders.

Each participating research group plans to focus on describing different body sites and diseases, while the US and EC will also contribute to a reference set of completely sequenced microbial genomes.

Data generated by IHMC projects will be made available through the NIH Human Microbiome Project Data Analysis and Coordination Center, led by Owen White, Ph.D., University of Maryland School of

Medicine, Baltimore and an equivalent center at the European Molecular Biology Laboratory (EMBL), led by Peer Bork, Ph.D. The data will also be distributed to other public databases, including those supported by the National Center for Biotechnology Information (http://www.ncbi.nlm.nih.gov/mapview), part of the National Library of Medicine.

Adapted from materials provided by European Commission, Directorate-General for Research (Research DG), via AlphaGalileo.

http://www.sciencedaily.com/releases/2008/10/081016124526.htm

New Solar Energy Material Captures Every Color Of The Rainbow

ScienceDaily (Oct. 17, 2008) — Researchers have created a new material that overcomes two of the major obstacles to solar power: it absorbs all the energy contained in sunlight, and generates electrons in a way that makes them easier to capture.

Ohio State University chemists and their colleagues combined electrically conductive plastic with metals including molybdenum and titanium to create the hybrid material.

"There are other such hybrids out there, but the advantage of our material is that we can cover the entire range of the solar spectrum," explained Malcolm Chisholm, Distinguished University Professor and Chair of the Department of Chemistry at Ohio State.

Sunlight contains the entire spectrum of colors that can be seen with the naked eye -- all the colors of the rainbow. What our eyes interpret as color are really different energy levels, or frequencies of light. Today's solar cell materials can only capture a small range of frequencies, so they can only capture a small fraction of the energy contained in sunlight.

This new material is the first that can absorb all the energy contained in visible light at once.

The material generates electricity just like other solar cell materials do: light energizes the atoms of the material, and some of the electrons in those atoms are knocked loose.

Ideally, the electrons flow out of the device as electrical current, but this is where most solar cells run into trouble. The electrons only stay loose for a tiny fraction of a second before they sink back into the atoms from which they came. The electrons must be captured during the short time they are free, and this task, called charge separation, is difficult.

In the new hybrid material, electrons remain free much longer than ever before.

To design the hybrid material, the chemists explored different molecular configurations on a computer at the Ohio Supercomputer Center. Then, with colleagues at National Taiwan University, they synthesized molecules of the new material in a liquid solution, measured the frequencies of light the molecules absorbed, and also measured the length of time that excited electrons remained free in the molecules.

They saw something very unusual. The molecules didn't just fluoresce as some solar cell materials do. They phosphoresced as well. Both luminous effects are caused by a material absorbing and emitting energy, but phosphorescence lasts much longer.

To their surprise, the chemists found that the new material was emitting electrons in two different energy states -- one called a singlet state, and the other a triplet state. Both energy states are useful for solar cell applications, and the triplet state lasts much longer than the singlet state.

Electrons in the singlet state stayed free for up to 12 picoseconds, or trillionths of a second -- not unusual compared to some solar cell materials. But electrons in the triplet state stayed free 7 million times longer -- up to 83 microseconds, or millionths of a second.

When they deposited the molecules in a thin film, similar to how they might be arranged in an actual solar cell, the triplet states lasted even longer: 200 microseconds.

"This long-lived excited state should allow us to better manipulate charge separation," Chisholm said.

At this point, the material is years from commercial development, but he added that this experiment provides a proof of concept -- that hybrid solar cell materials such as this one can offer unusual properties.

The project was funded by the National Science Foundation and Ohio State's Institute for Materials Research.

Chisholm is working with Arthur J. Epstein, Distinguished University Professor of chemistry and physics; Paul Berger, professor of electrical and computer engineering and physics; and Nitin Padture, professor of materials science and engineering to develop the material further. That work is part of the Advanced Materials Initiative, one Ohio State's Targeted Investment in Excellence (TIE) programs.

The TIE program targets some of society's most pressing challenges with a major investment of university resources in programs with a potential for significant impact in their fields. The university has committed more than $100 million over the next five years to support 10 high-impact, mostly interdisciplinary programs.

Co-authors on the PNAS paper from Ohio State included: Gotard Burdzinski, a postdoctoral researcher; Yi-Hsuan Chou, a postdoctoral researcher; Florian Fiel, a former postdoctoral researcher; Judith Gallucci, a senior research associate; Yagnaseni Ghosh, a graduate student; Terry Gustafson, a professor; Yao Liu, a postdoctoral researcher; Ramkrishna Ramnauth, a former postdoctoral researcher; and Claudia Turro, a professor; all of the Department of Chemistry. They collaborated with Pi-Tai Chou and Mei-Lin Ho of National Taiwan University.

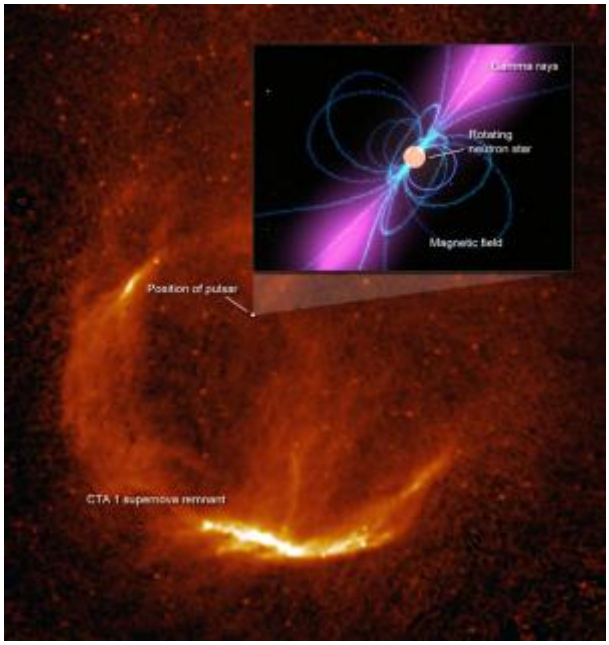
Journal reference:

1. G. T. Burdzinski et al. **The remarkable influence of M2δ to thienyl π conjugation in oligothiophenes incorporating MM quadruple bonds**. *PNAS*, October 2008

Adapted from materials provided by Ohio State University.

http://www.sciencedaily.com/releases/2008/10/081016132836.htm

First Gamma-ray-only Pulsar Observation Opens New Window On Stellar Evolution



NASA's Fermi Gamma-ray Space Telescope discovered the first pulsar that beams only in gamma rays. The pulsar (illustrated, inset) lies in the CTA 1 supernova remnant in Cepheus. (Credit: NASA/S. Pineault, DRAO)

ScienceDaily (Oct. 17, 2008) — About three times a second, a 10,000-year-old stellar corpse sweeps a beam of gamma-rays toward Earth. This object, known as a pulsar, is the first one known to "blink" only in gamma rays, and was discovered by the Large Area Telescope (LAT) onboard NASA's Fermi Gamma-ray Space Telescope, a collaboration with the U.S. Department of Energy (DOE) and international partners.

"This is the first example of a new class of pulsars that will give us fundamental insights into how stars work," says Stanford University's Peter Michelson, principal investigator for the LAT. The LAT data is processed by the DOE's Stanford Linear Accelerator Center and analyzed by the International LAT Collaboration.

The gamma-ray-only pulsar lies within a supernova remnant known as CTA 1, which is located about 4,600 light-years away in the constellation Cepheus. Its lighthouse-like beam sweeps Earth's way every 316.86 milliseconds and emits 1,000 times the energy of our sun. These results appear in the Oct. 16 edition of Science Express.

A pulsar is a rapidly spinning neutron star, the crushed core left behind when a massive sun explodes. Astronomers have cataloged nearly 1,800 pulsars. Although most were found through their pulses at radio wavelengths, some of these objects also beam energy in other forms, including visible light and X-rays.

Unlike previously discovered pulsars, the source in CTA 1 appears to blink only in gamma-ray energies, offering researchers a new way to study the stars in our universe. Scientists think CTA 1 is only the first of a large population of similar objects. "The LAT provides us with a unique probe of the galaxy's pulsar population, revealing objects we would not otherwise even know exist," says Fermi Gamma-ray Space Telescope Project Scientist Steve Ritz, at NASA's Goddard Space Flight Center in Greenbelt, Md.

The pulsar in CTA 1 is not located at the center of the remnant's expanding gaseous shell. Supernova explosions can be asymmetrical, often imparting a "kick" that sends the neutron star careening through space. Based on the remnant's age and the pulsar's distance from its center, astronomers believe the neutron star is moving at about a million miles per hour--a typical speed.

The LAT scans the entire sky every 3 hours and detects photons with energies ranging from 20 million to over 300 billion times the energy of visible light. The instrument sees about one gamma ray each minute from CTA 1. That's enough for scientists to piece together the neutron star's pulsing behavior, its rotation period, and the rate at which it's slowing down.

A pulsar's beams arise because neutron stars possess intense magnetic fields and rotate rapidly. Charged particles stream outward from the star's magnetic poles at nearly the speed of light to create the gamma-ray beams the telescope sees. Because the beams are powered by the neutron star's rotation, they gradually slow the pulsar's spin. In the case of CTA 1, the rotation period is increasing by about one second every 87,000 years.

This measurement is also vital to understanding the dynamics of the pulsar's behavior and can be used to estimate the pulsar's age. From the slowing period, researchers have determined that the pulsar is actually powering all the activity in the nebula where it resides.

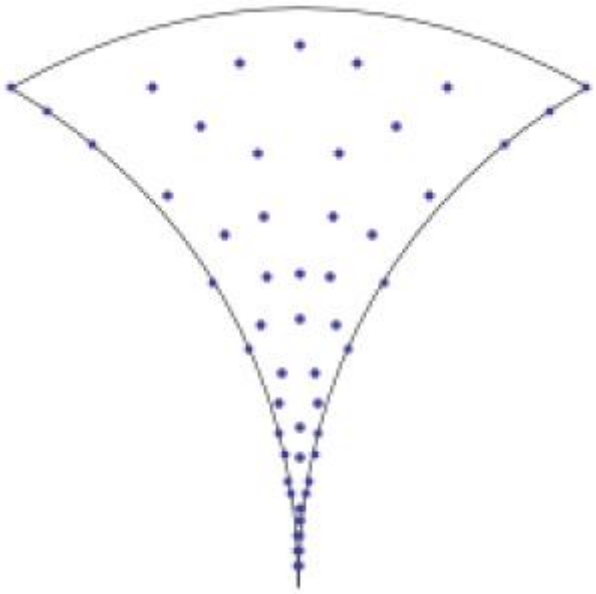
"This observation shows the power of the LAT," Michelson says. "It is so sensitive that we can now discover new types of objects just by observing their gamma-ray emissions."

NASA's Fermi Gamma-ray Space Telescope is an astrophysics and particle physics partnership, developed in collaboration with the U.S. Department of Energy, along with important contributions from academic institutions and partners in France, Germany, Italy, Japan, Sweden and the United States.

Adapted from materials provided by NASA.

http://www.sciencedaily.com/releases/2008/10/081016141421.htm

Mathematicians Illuminate Deep Connection Between Classical And Quantum Physics



Fundamental domains and zeros of cusp forms. This picture shows the zeros of a weight 500 Hecke eigenform in a particular fundamental domain for SL(2,Z). Zeev Rudnick proved that QUE implies that the zeros of the associated cusp forms also are equidistributed in the (hyperbolic) upper half-plane. So, this picture is an illustration of the result of Holowinsky and Soundararajan. (Credit: Image courtesy of Fredrik Stromberg)

ScienceDaily (Oct. 17, 2008) — In a seminar co-organized by Stanford University and the American Institute of Mathematics, Soundararajan announced that he and Roman Holowinsky have proven a significant version of the quantum unique ergodicity (QUE) conjecture.

"This is one of the best theorems of the year," said Peter Sarnak, a mathematician from Princeton who along with Zeev Rudnick from the University of Tel Aviv formulated the conjecture fifteen years ago in an effort to understand the connections between classical and quantum physics.

"I was aware that Soundararajan and Holowinsky were both attacking QUE using different techniques and was astounded to find that their methods miraculously combined to completely solve the problem," said Sarnak. Both approaches come from number theory, an area of pure mathematics which recently has been found to have surprising connections to physics.

The motivation behind the problem is to understand how waves are influenced by the geometry of their enclosure. Imagine sound waves in a concert hall. In a well-designed concert hall you can hear every note from every seat. The sound waves spread out uniformly and evenly. At the opposite extreme are "whispering galleries" where sound concentrates in a small area.

The mathematical world is populated by all kinds of shapes, some of which are easy to picture, like spheres and donuts, and others which are constructed from abstract mathematics. All of these shapes have waves associated with them. Soundararajan and Holowinsky showed that for certain shapes that come from number theory, the waves always spread out evenly. For these shapes there are no "whispering galleries."

Quantum chaos

The quantum unique ergodicity conjecture (QUE) comes from the area of physics known as "quantum chaos." The goal of quantum chaos is to understand the relationship between classical physics--the rules that govern the motion of macroscopic objects like people and planets when their motion is chaotic, with quantum physics--the rules that govern the microscopic world.

"The work of Holowinsky and Soundararajan is brilliant," said physicist Jens Marklof of Bristol University, "and tells us about the behaviour of a particle trapped on the modular surface in a strong magnetic field."

The problems of quantum chaos can be understood in terms of billiards. On a standard rectangular billiard table the motion of the balls is predictable and easy to describe. Things get more interesting if the table has curved edges, known as a "stadium." Then it turns out most paths are chaotic and over time fill out the billiard table, a result proven by the mathematical physicist Leonid Bunimovich.

In their QUE conjecture, Rudnick and Sarnak hypothesized that for a large class of systems, unlike the stadium there are no scars or bouncing ball states and in fact all states become evenly distributed. Holowinsky and Soundararajan's work shows that the conjecture is true in the number theoretic setting.

Highly excited states

The conjecture of Rudnick and Sarnak deals with certain kinds of shapes called manifolds, or more technically, manifolds of negative curvature, some of which come from problems in higher arithmetic. The corresponding waves are analogous to highly excited states in quantum mechanics.

Soundararajan and Holowinsky each developed new techniques to solve a particular case of QUE. The "waves" in this setting are known as holomorphic Hecke eigenforms. The approaches of both researchers work individually most of the time and miraculously when combined they completely solve the problem. "Their work is a lovely blend of the ideas of physics and abstract mathematics," said Brian Conrey, Director of the American Institute of Mathematics.

According to Lev Kaplan, a physicist at Tulane University, "This is a good example of mathematical work inspired by an interesting physical problem, and it has relevance to our understanding of quantum behavior in classically chaotic dynamical systems."

Adapted from materials provided by American Institute of Mathematics.

http://www.sciencedaily.com/releases/2008/10/081010081650.htm

Cartoons for Grown-Ups

By DAVID KAMP

EXPLAINERS

Written and illustrated by Jules Feiffer

546 pp. Fantagraphics Books. $28.99

At this point, there's an entire generation of parents and kids who know Jules Feiffer solely as a children's book author, the man behind the charming bedtime standbys "Bark, George" and "By the Side of the Road." It's been eight years since he stopped doing his weekly syndicated comic strip for grown-ups, which was simply called "Feiffer," and 37 years since Mike Nichols filmed Feiffer's screenplay "Carnal Knowledge," an acutely adult-oriented examination of sexual desire, virginity loss, infidelity, divorce and other subjects that never come up in "Bark, George." So the new anthology "Explainers," which gathers all of Feiffer's Village Voice strips from 1956 to 1966, is a welcome reintroduction — or introduction, for the uninitiated — to a great cartoonist who boldly bent his medium to adult purposes long before it was commonplace to do so. As squat and dense as a loaf of spelt bread, this book reproduces the first decade of "Feiffer" in its entirety, and therefore captures in minute detail the birth and development of a whole new approach to cartooning.

Certainly the young Garry Trudeau and Berkeley Breathed were paying attention. The strips collected in "Explainers" anticipate "Doonesbury" in their unapologetic text-heaviness and political content, and "Bloom County" in the characters' frazzled, pixilated facial expressions and the cartoonist's agitated, slightly forward-pitched lettering. (Lettering is the most underrated of cartoonist's skills; Feiffer is an ace.) You also detect portents of Art Spiegelman, Mark Alan Stamaty and the entire graphic-novel genre. It's no exaggeration to say that Feiffer opened up the full range of possibilities of what a comic strip could be.

Yet in 1956, Feiffer was a 27-year-old who couldn't get arrested in the business. This was attributable as much to his own obstinacy as to any prevailing trends. He didn't have it in him to be a family-friendly gag man like Hank "Dennis the Menace" Ketcham or a concocter of superhero adventures for DC Comics. The New Yorker's wry panel cartoons were a closer match to Feiffer's ethos, but still too pat and limiting. Feiffer aspired to nothing less than book-length narratives, satirical and topical, and for this ambition, he was rewarded with a pile of rejection letters.

In his introduction to "Explainers," Gary Groth, the book's editor and one of its publishers, elicits a revealing comment from Feiffer about his plight at that time. "It was a Catch-22 situation," the cartoonist says. "I had no name, so who was going to buy this work that looked like children's drawings, but was very adult material? Now, if my name were Steig, it would be marketable. If my name were Steinberg, then they could sell it. If my name were Thurber, no problem. So I had to figure out a way of becoming Steig, Steinberg or Thurber in order to get what I wanted into print. I thought of all sorts of things. I could kill somebody, and then get famous that way, and then I could get published. I could commit suicide" — but "suicide was not yet established as a form of self-promotion."

It's telling that Feiffer would single out William Steig, Saul Steinberg and James Thurber, then the most idiosyncratic of New Yorker cartoonists — the ones least likely to offer up flip cocktail-party vignettes or tidy, "correct" drawings. Feiffer wanted to be a mold-breaker like those three, but in the idiom of the multipaneled strip. And this strip, were it to exist — well, it wouldn't be ha-ha funny but mordantly funny, reflecting the humor and outlook of the kind of guy who jokes about committing murder or suicide for publicity purposes.

Fortuitously, just as Feiffer had run out of publishers to reject him, The Village Voice was founded, in 1955, to capture the new breeze a-blowin' in beatnik-era Greenwich Village. It was the sympathetic alternative publication that Feiffer had been looking for. He toted his rejected manuscripts to its offices, sat there as its editors avidly pored over his work and left the premises as The Voice's cartoonist.

His strip, usually six to eight borderless panels, initially appeared under the title "Sick Sick Sick," with the subtitle "A Guide to Non-Confident Living." As the Lenny Bruce-ish language suggests, the earliest strips are very much of their time, the postwar Age of Anxiety in the big city; you can practically smell the espresso, the unfiltered ciggies, the lanolin whiff of woolly jumpers. In Feiffer's sixth-ever strip, an advertising executive is rallying his creative team to make nuclear fallout sexy, proposing "a TV spec called 'I Fell for Fallout' " and "a 'Mr. and Mrs. Mutation' contest — designed to change the concept of beauty in the American mind." The week after that, a macho poet type confides his most shameful secret to his coffeehouse girlfriend: "I've never been to Europe." And the week after that, Feiffer literally puts Oedipus on a psychoanalyst's couch: a hipster in a toga and Ray Charles shades, confessing: "All right. . . . So I marry her. But did I know she was my mother? It's not like I was sick or something."

The material may show some age, but from the get-go Feiffer's visual style was assured and bracingly modern: his figures eloquently but sparely drawn (with a thin wooden dowel dipped in ink, not a pen), and no background illustration, just white space. While the strip continued to plumb topical themes as it progressed — Lyndon Johnson, Barry Goldwater and William F. Buckley Jr. all make appearances in "Explainers" — Feiffer became a nimbler satirist, hitting upon several recurring setups and characters that would transcend their atomic-age origins.

Chief among these characters were Bernard, the archetypal sweet, considerate young man whom women know they should like but aren't attracted to, and Huey, the vain, callous lout they can't resist. Bernard and Huey were prototypes of the Art Garfunkel and Jack Nicholson characters in "Carnal Knowledge," but their adventures in "Feiffer" remain relevant to urban singles life in a way that the blowsy, date-stamped movie doesn't. In a representative strip from 1960, a comely date tells Bernard, "Sometimes when I've hurt you — you get that lost, little-boy look that makes me want to run over and squeeze you." Two panels later, she adds, "But that doesn't mean I want your hands on me."

Of course, representing any Feiffer strip with a quick quotation really doesn't do it justice. His garrulous, neurotic characters yammer on and on, their logorrhea half the fun (and often taking up more than half the space). A mouse in the clutches of a cat shouts: "Go ahead! Eat me! Play into their hands!" The cat meekly responds, "Can't we just accept our given roles?" There follows an elaborate back-and-forth about established mores, class systems and man's paternalism toward animals, which so flummoxes the cat that he loses his appetite and leaves. Whereupon the mouse mutters: "Weakling — wishy-washy. I would have eaten him." And the kicker: "What can you expect from liberals."

Feiffer's basic scheme was to mine the humor of social and political blather — to show, in a funny way, how people talk and talk but never connect. In our current age of blogs, compulsive confessionals and nightly shoutfests on Fox News and MSNBC, it's no surprise that so many find him prescient.

But paging through "Explainers," I don't see cynicism. Given the strips' vintage, I can't help thinking of the Simon and Garfunkel song "Sounds of Silence": "People hearing without listening / People writing songs that voices never share." As unrelenting a satirist as the young Feiffer was, he had a bit of Paul Simon's winsome earnestness. His humor was dark but not nihilistic; he held out hope that his characters would straighten themselves out.

Feiffer says as much in the introduction to this book when he explains to Groth why it is he now finds refuge in writing children's books: "They represent the gentler, sweeter world that, as we grow older, we go about corrupting first chance we get. No, that's too cynical. Second and third chance we get."

David Kamp, a contributing editor for Vanity Fair, is the author of "The United States of Arugula."

http://www.nytimes.com/2008/10/19/books/review/Kamp-t.html?_r=1&8bu&emc=bua1&oref=slogin

Unsafe at Any Read

By LEE SIEGEL

Kenneth Burke considered great imaginative writing "equipment for living," and for Saul Bellow poetic and philosophical words were a "poor boy's arsenal." Kafka declared that literature "breaks up the frozen sea inside us." (What a mess that would make.) We now know, thanks to Allan Bloom, that reading the "classics" is the only defense against the closing of the American mind and that — courtesy of Alain de Botton — Proust can save your life. A modest question arises, however: If great literature is so great, why is it that if you act on anything great literature tells you about life, you're in big trouble? I mean, big trouble.

Let's start with a couple of harmless tests. Have you gone looking in your memory lately for Wordsworth's redemptive "spots of time"? First, try to recall what you had for lunch yesterday. Don't worry, I can't remember either. How about D. H. Lawrence's "blood consciousness"? Once you recover this primal state of being, D. H. tells us, you blissfully obliterate your mental and spiritual condition. Volunteers?

Now, I used to swallow this stuff whole. Don Quixote's downfall was medieval romances, and Emma Bovary ruined her life with novels, but at least they didn't get bonked by books until they were middle-aged. They had a few decades to live it up. My undoing arrived in ninth grade in the form of Dostoyevksy's "Notes From Underground."

The book fell into my hands the way an innocent person might find himself holding a heroin-filled syringe at a party, thereby sealing his sad fate. I had been involuntarily enrolled in what was euphemistically referred to as an "enrichment program." This was the official name for a "Manchurian Candidate"-like experiment in which happy-go-lucky boys and girls were whisked away from their favorite television shows into a shadowy world of triple meanings, narcotic generalizations and ambiguous imagery. "Notes From Underground" was our first homework assignment.

What buried flaw in my being responded to this perverse Slavic sham is still a mystery to me. But all of a sudden, I started explaining to my gentle, loving parents that common sense was the collective hallucination of madmen. That the idea that two plus two equaled five was "tantamount" (a word I envisioned as a white steed rising heavenward to steadily beating drums) to a "spiritual" (another fave) rebirth.

Rationality, I informed Mom and Dad, was like a dagger in the soul. I said all this through $40 million worth of hardware on my teeth — instead of sending me to an ordinary orthodontist, my doting parents had actually hired a top civil engineer to work on my mouth. I exaggerate, but you see what I mean. And this is how I paid them back. Week after week, I expounded the cult of unhappiness at the dinner table. Exiled to my room, I consoled myself with Camus, who tells us that to live honestly we must ask ourselves every day whether we should take our own lives. There was no agency, on the local, state or federal level, to intervene on my behalf. The die was cast.

Harold Bloom once wrote that literature's most precious gift is to teach us to be alone with ourselves. Easy to say when you're surrounded by adoring graduate students. I began to carry around my solitude like a trophy, cultivating anomie the way some of my friends lavished care on their pet gerbils. It was an unhealthy situation.

This wasn't just baffled adolescent desire rushing with relief into morbid tales of anger and renunciation. Uplifting writing derailed me, too. When, in 10th grade, Antonia Perella (let's call her) — the love of my hormone-addled life! — finally chose me as her partner at a square dance, I was so afraid of not rising to the occasion that I refused, ennobling my cold feet by summoning to my mind Plato's vision of love (see "Phaedrus") as moist wings sprouting from the lover's body. I just didn't feel the wings business, I told myself. Recently, I learned from Classmates.com that Antonia had married a professional wrestler. Can you blame her?

But even Oedipus eventually saw the light (or so Sophocles tells us — you decide). Somewhere in my freshman year of college, my mind, thankfully, began to close a little and the world started to open up. I was on the slow boat to recovery . . . and then calamity struck. A "friend" lent me his copy of Bellow's "Herzog."

If ever there was a candidate for strict Congressional oversight, it is this cunning little book. Moses Herzog is a professor in the full throes of midlife crisis who writes countless letters to the famous literary and intellectual dead. These scintillating one-sided exchanges, in which Herzog quotes and spars with the great minds of Western civilization, made me feel that I was mastering life as I read them, just as a budding music historian might have the delusion that he was mastering the piano simply by listening to a sonata by Beethoven.

In fact, as I discovered many years later, Bellow was joking. What he wanted to demonstrate, in the figure of poor Herzog, was the utter ineffectuality of the most potent ideas. Thanks for letting me know, pal. Since nobody at the time bothered to let me in on all the fun, I finished "Herzog" as, well, Herzog. At job interviews, I assured prospective employers of my immunity to distraction by affectionately invoking Artistotle's observation that copulation makes all animals sad. To puzzled women on dates, I expatiated on Hegel and Sombart. "What's wrong?" one girl asked me as we stared into each other's eyes and I smiled ruefully. "Oh nothing," I said. "Spinoza associated desire with disconnected thinking — that's all."

And so it went, just like that, reaching the high point of absurdity when I applied for a job at a publication called The Social Register, thinking that it was a socialist magazine.

I had been reading Gramsci by way of Silone by way of Engels on the Manchester working class. So enthusiastic had I become about the sweeping inexorabilities of dialectical materialism that I neglected to pick up an actual, material copy of The Social Register. Grando mistako. If I had, I would have seen that

it was not a socialist magazine at all, but a comprehensive directory of America's high society. My interviewer, a pleasant, 40-ish man in a rumpled white shirt and tie, sat in his Fifth Avenue office and listened politely, his lip curling ever so slightly, to my reflections on hegemony, slave consciousness and "boring from within." He even walked me to the door.

I hope you are at least partly convinced by the power of my examples. Somehow, we've been sold a bill of goods about how literature empowers us. But the idea that great literature can improve our lives in any way is a con as old as culture itself. The University of Chicago's Great Books course? Think Tammany Hall. "Willing suspension of disbelief"? Code for: distract him while I lift his wallet. The government regulates drugs, alcohol and (finally) bad lending practices. How long can we continue to allow the totally laissez-faire dissemination of literature? Not even a warning from the surgeon general or the attorney general, or some sort of general, on the back of every book?

It was years before I realized that if life is a voyage of sorts then the best thing to do is to keep busy in the depths of your little boat — your life — polishing, tuning, cleaning, repairing the engine that is your own inborn strength, without regard to extraneous aids in the form of culture. Facing it, always facing it, that's the only way to get through.

O.K., I got all that from Conrad. The fact is that "facing it" has gotten me into trouble, too. I tell you, these people are hard to shake.

Lee Siegel's most recent book is "Against the Machine: Being Human in the Age of the Electronic Mob." He is a visiting lecturer in cultural criticism at Rutgers University.

http://www.nytimes.com/2008/10/19/books/review/Siegel-t.html?8bu&emc=bub1

Health, Behavior and College GPA

The list of traits and behaviors that college officials believe are bad for their students is long, and the list of successful counter-tactics is short. Drinking is bad for me? My parents drink; why shouldn't I? I spend too much time on the computer? It's where I find out what I need to know and keep up with friends. I don't get enough rest? I'm young; I'll sleep when I'm dead.

Ed Ehlinger, director of the University of Minnesota's Boynton Health Service, said that while he and other health officials have long argued that such activities hurt students academically, there has been little or no "documentation that it actually was true."

So Ehlinger and colleagues at other colleges and universities in Minnesota this year expanded their longstanding College Student Health Survey to, for the first time, try to document that "the stuff that our parents have told us all along" is true. In addition to collecting the usual information about the frequency and intensity of various student behaviors and traits, the researchers also gathered data about students' perceptions of the impact on their academic performance and about their actual grade point averages.

The ensuing report, which includes data on nearly 10,000 undergraduate students at two-year and four-year colleges in Minnesota, both backs up some long-contended assertions on the part of college health officials and also suggests some areas of concern that caught the researchers by surprise.

In the former category, it's unlikely to stun anyone that students who reported both that they use alcohol or drugs and that they believe that behavior affected their academic performance had far lower GPAs than did students who said they did not have an "issue" with alcohol or drugs (2.92 vs. 3.28 for alcohol and 2.94 vs. 3.25 for drugs). But Ehlinger said that it was heartening to him that the study's data back up the conventional wisdom that that "there's a linear relationship — as high-risk drinking goes up, grade point average goes down (from an average GPA of about 3.30 for students who had not engaged in binge drinking in the preceding two weeks to about 3.10 to 3.15 for those who had done so twice or more in the previous two weeks).

More surprising, Ehlinger said, were findings about the strong associations between lower GPAs and tobacco use and lack of health insurance.

Students who reported smoking or using smokeless tobacco in the previous 30 days had significantly lower mean GPAs than did other students, a result he attributed not to tobacco use itself but because "tobacco use is an indicator for other behaviors," including alcohol, stress and credit card debt. In addition, the 9.3 percent of respondents who said they did not have health insurance had a lower average GPA than did their peers (3.17 vs. 3.25), which Ehlinger said was "probably linked to stress and to not having access to preventive health services."

Among the survey's other findings:

Stress was the most commonly reported health and personal issue that seemed to have a negative effect on academic performance. Seven in 10 students reported having an "issue" with stress, and about a third said they believed it affected their academic performance. But feeling stress didn't necessarily hurt academic performance; the study found "no documented relationship between students' reported stress level and their mean grade point averages," suggesting that many students "felt stressed but felt like they could handle the stress," said Ehlinger. But students who truly *experienced* stress — as measured by exposure to established stressors such as getting married, failing a class, facing excessive credit card debt, or seeing a close friend or relative die or fall seriously ill — did see a major downturn in academic performance, in line with the number of such stressors they experienced. "Those things do pile up, and each of them adds" to the effect, Ehlinger said.

Grade point averages fell as hours that students spent watching television or on the computer for purposes other than work or study grew. The 25 percent of undergraduates who reported watching television two hours a day had an average GPA of 3.21, as did the 18 percent who said they spent two hours a day in front of the computer screen for non-school or work purposes. The roughly 10 percent of students who spent four or more hours in one of those activities had GPAs of about 3.00. Those who reported spending less than an hour a day in those activities had GPAs of about 3.3.

GPA also increased with the number of days of adequate sleep a student had in the previous seven days. Data on that and many of the other behaviors appears in the table below.

Ehlinger said the study had several purposes, including persuading campus administrators to pay attention to the health of their students ("Give them access to insurance and health care," "have an environment that helps reduce stress," etc.), prodding faculty members to "care not just about the brain" but about the "brain inside the body" of their students, and to students themselves. "The message is that there are simple things — not necessarily easy things, but simple things — that you could do to positively impact your GPA, like turning off the computer and getting to bed," Ehlinger said.

"We all know these things," he added, "but when you see them linked directly to GPA, it may be just the impetus to push them toward a change in behavior."

Health and Personal Issues and Grade Point Average, Minnesota Undergraduate Students

Behavior or Activity	% Reporting the Issue	% Saying the Issue Affected Academics	Mean GPA for Students Who Say Issue Affected Academics	Mean GPA for Students Who Did Not Report the Issue
Stress	69.9%	32.9%	3.12	3.23
Sleep Difficulties	40.8	20.0	3.08	3.27
Concern for Troubled Friend/Family Member	42.4	15.8	3.08	3.25
Relationship Issues	34.8	14.1	3.10	3.25
Excessive Computer/Internet Use	30.4	13.0	3.04	3.27
Financial Difficulties	44.0	12.8	3.03	3.28
Mental Health Issues	21.5	12.3	3.08	3.25
Upper Respiratory Infection	36.5	11.5	3.12	3.23

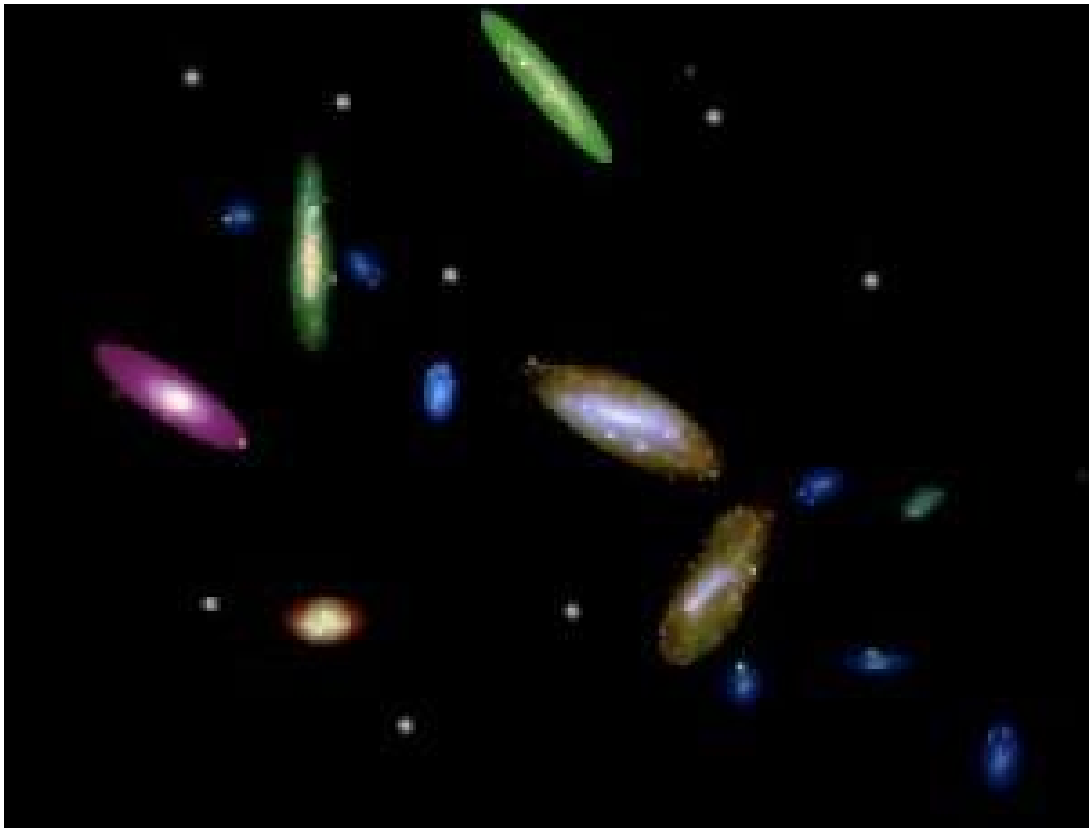
Alcohol Use	32.8	7.5	2.92	3.28
Learning Disability/ADD	7.2	4.3	2.93	3.26
Moved/Changed Residence	21.5	3.8	3.05	3.24
Drug Use	6.5	2.2	2.94	3.25
Serious Injury	4.6	2.0	3.01	3.25
Allergies	29.7	1.8	3.04	3.24
Chronic Conditions	10.3	1.8	3.17	3.24
Mono	3.1	1.6	3.19	3.24
Eating Disorder	4.6	1.2	3.13	3.24

Source: College Student Health Survey

— Doug Lederman

The original story and user comments can be viewed online at http://insidehighered.com/news/2008/10/21/health.

'Filament' Of Dark Matter Supports 'Bubbly' Universe Theory



The picture shows the 14 galaxies studied at the Wise Observatory. The galaxies stretch along a line from the lower-right to the top-left corner of the image. The star-forming regions are highlighted as shining reddish points. (Credit: Image courtesy of Tel Aviv University)

ScienceDaily (Oct. 21, 2008) — Despite thousands of years of research, astronomers know next to nothing about how the universe is structured. One strong and accepted theory is that large galaxies are clustered together on structures similar to giant soap bubbles, with tinier galaxies sprinkled on the surface of this "soapy" layer.

New observations from Tel Aviv University are giving new strength to this theory. A team led by Dr. Noah Brosch, Director of the Tel Aviv University-owned Wise Observatory, is the first in the world to uncover what they believe are visible traces of a "filament" of dark matter -- an entity on which galaxies meet, cluster and form. A filament can originate at the junction of two "soap bubbles," where the thin membrane is thicker.

Dr. Brosch, with his M.Sc. student Adi Zitrin and researchers from Cornell University, studied an area of the sky opposite the constellation Virgo, where 14 galaxies were forming in a line. Pundits have called the line a "Bridge to Nowhere" because it seems to start and end in unknown locations. Strangely, 13 of these galaxies were simultaneously giving birth to new stars.

A Hair on the Beard of the Creator

The odds of this occurrence are very rare, leading the researchers to believe that the galaxies might somehow be forming on this elusive filament, made entirely from dark matter, which attracts regular

matter that then turns into new stars. "There has long been a theoretical belief that this was the case," says Dr. Brosch, "but this new finding represents experimental results that such a filament really exists, and that possibly it is an entity made from dark matter which is aligning these galaxies."

Dr. Brosch compares the work of an astronomer to "looking for hairs of the beard of the Creator."

This line of galaxies may be one such hair. Generally speaking, matter as we know it on earth makes up only a small percentage of our universe. The composition of most of the universe is unknown -- it's either dark matter (about one quarter of the universe) or dark energy (the other three-quarters). "Our studies show that you don't need to go to the edge of the universe to find dark matter. It may be only 15 million light years away, more or less in our backyard," says Dr. Brosch.

The research has massive implications for astronomy and the understanding of galaxy-formation. And due to the surprising closeness of this new grouping of galaxies to ours, it would only be a matter of technological advances -- maybe a couple of hundred years -- and a longer human lifespan before explorers could visit this unusual dark matter in person. "Our technology is abysmally limited right now, but it could definitely happen," says Dr. Brosch.

Adapted from materials provided by Tel Aviv University.

http://www.sciencedaily.com/releases/2008/10/081020135219.htm

Role Of Fatty Acids In Alzheimer's Disease Identified

ScienceDaily (Oct. 21, 2008) — Scientists at the Gladstone Institute of Neurological Disease (GIND) and the University of California have found that complete or partial removal of an enzyme that regulates fatty acid levels improves cognitive deficits in a mouse model of Alzheimer's disease (AD). Their findings published October 19 in Nature Neuroscience, identified specific fatty acids that may contribute to the disease as well as a novel therapeutic strategy.

AD causes a progressive loss of cognitive functions and results in death. Over 5 million Americans are living with this condition. Although there are treatments to ease the symptoms, these treatments are not very effective and researchers have yet to discover a cure.

"Several different proteins have been implicated in Alzheimer's disease," said Lennart Mucke, M.D., GIND director and senior author of the study, "but we wanted to know more about the potential involvement of lipids and fatty acids."

Fatty acids are rapidly taken up by the brain and incorporated into phospholipids, a class of fats that form the membrane or barrier that shields the content of cells from the external environment. The scientists used a large scale profiling approach ("lipidomics") to compare many different fatty acids in the brains of normal mice with those in a mouse model of Alzheimer's disease that develops memory deficits and many pathological alterations seen in the human condition.

"The most striking change we discovered in the Alzheimer mice was an increase in arachidonic acid and related metabolites in the hippocampus, a memory center that is affected early and severely by Alzheimer's disease," said Rene Sanchez-Mejia, M.D., lead author of the study.

In the brain arachidonic acid is released from phospholipids by an enzyme called group IVA phospholipase A2 (or PLA2). The scientists lowered PLA2 levels in the Alzheimer mice by genetic engineering. Removal or even partial reduction of PLA2 prevented memory deficits and other behavioral abnormalities in the Alzheimer mice.

"Arachidonic acid likely wreaks havoc in the Alzheimer mice by causing too much excitation, which makes neurons sick. By lowering arachidonic acid levels, we are allowing neurons to function normally," said Dr. Sanchez-Mejia.

Dr. Mucke added, "in general, fatty acid levels can be regulated by diet or drugs. Our results have important therapeutic implications because they suggest that inhibition of PLA2 activity might help prevent neurological impairments in Alzheimer's disease. But a lot more work needs to be done before this novel therapeutic strategy can be tested in humans."

John W. Newman, Sandy Toh, Gui-Qiu Yu, Yungui Zhou, Brian Halabisky, Moustapha Cisse, Kimberly Scearce-Levie, Irene H. Cheng, Li Gan, Jorge J. Palop, Joseph V. Bonventre, and Lennart Mucke also contributed to the study. The research was supported by the National Institutes of Health, the United States Department of Agriculture, and the Gladstone Institutes.

Adapted from materials provided by Gladstone Institutes, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2008/10/081019144618.htm

Best Treatment Determined For Childhood Eye Problem, Study Suggests

ScienceDaily (Oct. 21, 2008) — Mayo Clinic researchers, as part of a nine-site study, helped discover the best of three currently-used treatments for convergence insufficiency in children. Convergence refers to the natural ability of the eyes to focus and align while viewing objects up close.

Children with convergence insufficiency tend to have blurred or double vision or headaches and corresponding issues in reading and concentrating, which ultimately impact learning. The findings show children improve faster with structured therapy sessions in a doctor's office, with reinforcement eye exercises at home.

"This is good news for children and parents experiencing this fairly common condition," says Brian Mohney, M.D., Mayo Clinic ophthalmologist and lead investigator for Mayo in the study. "Three different approaches were being used across the country and no one knew for certain which worked best. Now that's settled. And only 12 weeks of treatment were necessary to demonstrate improvement."

How they did it

The researchers followed 221 children nationally, ages 9 to 17, divided into four study groups, two of which received only home-based therapies. One group did simple daily exercises for 15 minutes, trying to focus on a moving pencil. A second home-based group performed a shorter version of the pencil exercise and a series of computer-based exercises using special software. A third group did an hour of supervised therapy in a clinical office each week along with 15 minutes of prescribed exercises at home five days a week. The fourth group, the placebo or control group, did office and home exercises designed to look like real therapy but that had no effect. Follow-up exams were held after the fourth and eighth weeks and at the end of the 12-week study.

Significance of the findings

Children in all three treatment groups experienced improvement, though it's not clear from the research whether any improvement in the home groups was due to a placebo effect. About 75 percent of the children who had weekly office-based therapy coupled with 15 minutes of at-home exercise five days a week experienced either normalization (full correction) of their vision in 12 weeks or saw marked improvements, compared to roughly 40 percent in the two home treatment groups. Researchers say that the lower cost of home therapy may be a factor in its popularity, but they point to the high percentage of normalized vision in the office-based sample after 12 weeks as an indicator of quality outcome in the shortest period of time.

The National Eye Institute, part of the National Institutes of Health, sponsored the study. Others involved in the research from Mayo Clinic were Jonathan Holmes, M.D.; Melissa Rice, O.D.; Virginia Karlsson; Becky Nielsen; Jan Sease; and Tracee Shevlin.

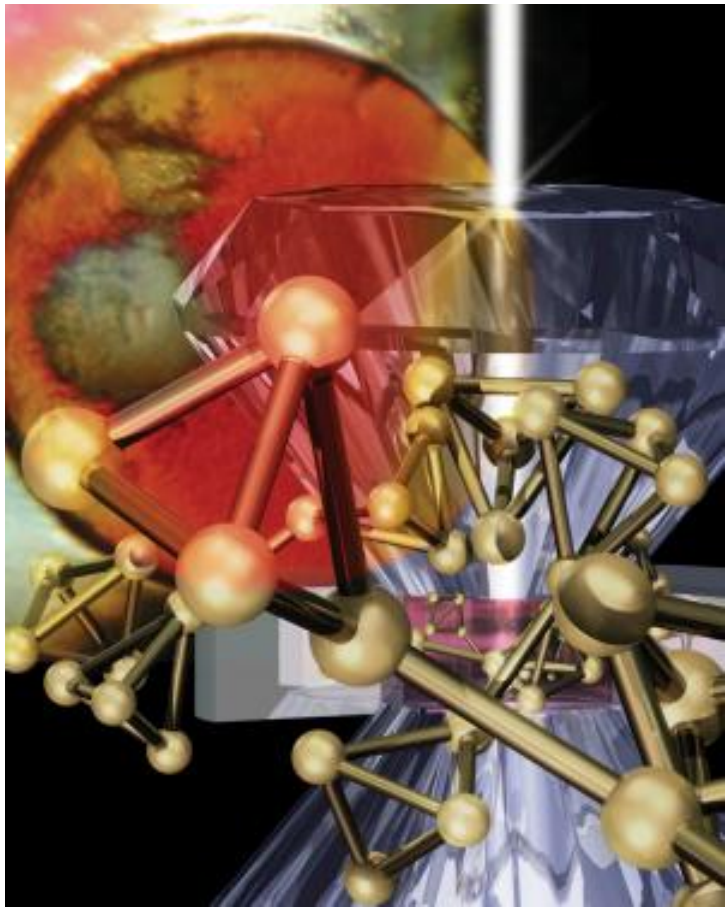
Journal reference:

1. . **Randomized Clinical Trial of Treatments for Symptomatic Convergence Insufficiency in Children**. *Archives of Ophthalmology*, 2008;126(10):1336-1349 [link]

Adapted from materials provided by Mayo Clinic.

http://www.sciencedaily.com/releases/2008/10/081013171501.htm

New Tools That Model 3D Structure Of Amorphous Materials To Transform Technology Driven R&D



The production of amorphous red phosphorus was first reported by A. Vogel in 1813. Now pressure-dependent 3D atomic structure models have been constructed to be consistent with neutron and X-ray diffraction diamond anvil cell data. (Credit: Image by Scott Dougherty/LLNL)

ScienceDaily (Oct. 21, 2008) — Researchers have accurately identified tools that model the atomic and void structures of a network-forming elemental material. These tools may revolutionize the process of creating new solar panels, flat-panel displays, optical storage media and myriad other technological devices.

The team, made up of researchers from Lawrence Livermore National Laboratory, Rutherford Appleton Laboratory and Lawrence Berkeley National Laboratory, created 3D models of pressure-dependent structures of amorphous red phosphorus (an allotrope of the element phosphorous with different structural modifications) that for the first time are accurately portrayed by neutron and X-ray diffraction studies. They also developed a new method to accurately characterize void structures within network-forming materials.

These results on an elemental material serve as a benchmark indicating the ability of their analysis tools to accurately portray the entire structure of multi-atomic amorphous material systems. The mechanical, optical, magnetic and electronic plasticity of amorphous materials hold great promise toward enhancing current and emergent technologies. The new tools will build more systematic design paths leading to R&D advances.

Amorphous red phosphorus (a-rP) was first reported to be formed by A. Vogel in 1813 when sunlight was focused onto white phosphorus. During the 20th century, a-rP was studied intensely using a wide array of experimental and theoretical tools.

Beginning in the 1970s and '80s, amorphous or disordered materials were found to exhibit technologically viable properties by their central role in photovoltaic cells and portable opto-electronic storage media such as CDs, DVDs, and more recent Blu-Ray disks. However, attempts by scientists to accurately characterize seemingly simple elemental materials like a-rP were hindered because the appropriate analysis tools simply did not exist.

But the recent team of scientists: Joseph Zaug of LLNL, Alan Soper of Rutherford and Simon Clark of LBL, conducted X-ray and micro-Raman measurements of a-rP as a function of applied pressure and developed diffuse scattering analysis tools to unambiguously reveal not only 3D atomic structures, but also the void structures that significantly affect bulk material properties.

X-ray patterns of many amorphous materials reveal an unusually narrow and sometimes remarkably intense diffraction peak. The first sharp diffraction peak (FSDP) of multi-atomic systems is now predominately accepted to be associated with atomic scale voids that result from chemical-chemical bonding geometries.

As reported in the study that appears in the Oct. 12 online edition of the journal Nature Materials, the new void analysis tools may reveal that multi atomic amorphous material voids occur more simply from density-density fluctuations.

The diffuse scattering analysis tools developed by these scientists will enable more systematic engineering routes toward design and characterization of amorphous materials.

The team used the Advanced Light Source, Beam line 12.2.2, at Lawrence Berkeley Laboratory to conduct the X-ray scattering measurements.

Adapted from materials provided by DOE/Lawrence Livermore National Laboratory.

http://www.sciencedaily.com/releases/2008/10/081014111405.htm

Scientists Create 'World's Most Relaxing Room'

The World's most relaxing room. (Credit: Image courtesy of University of Hertfordshire)

ScienceDaily (Oct. 21, 2008) — Psychologist Professor Richard Wiseman has designed and constructed a large-scale multi-media space that aims to calm even the most stressed out of minds.

To help promote the University of Hertfordshire's Health and Human Sciences Research Institute Showcase, Wiseman reviewed the scientific research into relaxation, and has created what is being billed as 'The world's most relaxing room.'

During the Showcase, which runs from 21-24 October at the University's de Havilland campus, groups of up to ten visitors at a time will be invited to enter this large and unusual space, lie on soft matting and rest their head on lavender-scented pillows. In each fifteen minute session, people will be bathed in a calming glade-like green light, listen to a specially composed soothing soundtrack, and look at a completely clear artificial blue sky.

"The pace of modern-day life, credit crunch, and financial crisis is making many people feel very stressed and so we have created this space to help them relax", noted Professor Wiseman.

"Research suggests that the subdued green light enhances the production of dopamine in the brain and provide a calming sensation. In addition, the artificial blue sky helps create a mild form of sensory deprivation that will help them turn their attention inward and distract them away from daily stress."

The music that will be played during each session has been specially composed by University of Hertfordshire Professor of Music, Tim Blinko.

"Richard asked me to create a piece of music with a slow and distinct rhythm, low frequency notes, and no sudden changes in tempo", noted Professor Blinko. "I have completely re-written a piece especially for this project. It features a solo soprano voice, chosen for the soothing properties of the human voice, together with a Tibetan singing bowl, used in meditation and a string ensemble."

A few years ago, Wiseman headed an international study examining walking speeds around the world, and discovered that people are living more fast-paced and stressful lives than ever before. It is hoped that the room will help motivate different groups of people to combat stress, including, for example, students facing exams and businesses wishing to lower their employees' stress-related absenteeism.

Professor Wiseman added, "Previous work has shown that these colours, sounds and smells all help people relax, but this is the first time that they have been combined in this way, and it will be fascinating to look at the effect on visitors' relaxation levels."

The following questionnaire helps identify people who might be living life at a pace that exacerbates stress. 5 or more 'yes' responses suggest that it might be time to take your foot off the accelerator and slow down.

1) Do you seem to glance at your watch more than others?

2) When someone takes too long to get to the point, do you feel like hurrying them along?

3) Are you often the first person to finish at mealtimes?

4) When walking along a street, do you often feel frustrated because you are stuck behind others?

5) Would you become irritable if you sit for an hour without doing anything?

6) Do you walk out of restaurants or shops if you encounter even a short queue?

7) If you are caught in slow-moving traffic, do you seem to get more annoyed than other drivers?

Stress busting tips:

Being stressed can increase your blood pressure, affect your ability to concentrate, and weaken your immune system.

Those who can't make it to the world's most relaxing room might want to try the following 10 techniques to help combat stress:

1) Head for the countryside. Research shows that spending around thirty minutes in green and quiet surroundings will make you feel significantly more relaxed.

2) Listen to soothing music. Listening to Vivaldi's Four Seasons, a relaxation tape, or nature sounds lowers your blood pressure.

3) Carry out a relaxation exercise. Starting at your toes and working upwards, spend a few moments slowly tensing, and then releasing, the muscles of each part of your body.

4) Spend time with friends. Being with people you like helps distract you from anxious thoughts and lifts your mood.

5) Help others. Research shows that even carrying out a small act of kindness, such as making a donation to charity, helps improve your mood and decreases stress.

6) Accept what you can't change. There is no point dwelling on the past, or thinking about what can't be altered. Instead, focus on how you can create a better future.

7) Smile more. Don't take life too seriously, and improve your ability to cope with stressful situations by seeing the funny side of whatever happens.

8) Use lavender. Research shows that most people find the smell of lavender especially relaxing, and that it also helps them get a good night's sleep.

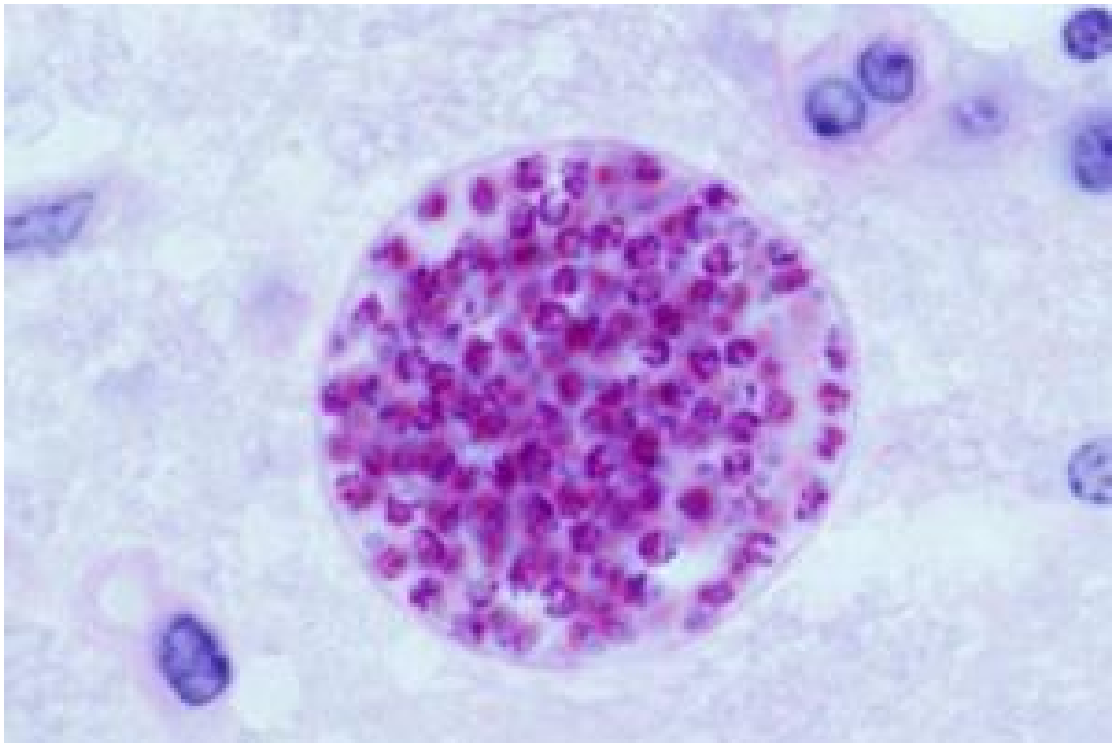
9) Hit the gym. Exercise promotes the production of endorphins, which, in turn, make you feel better about yourself and become more relaxed.

10) Look at the sky. If it is a nice day, lie on the grass, look up at a clear sky, and allow positive thoughts and images to drift through your mind.

Adapted from materials provided by University of Hertfordshire, via AlphaGalileo.

http://www.sciencedaily.com/releases/2008/10/081020192707.htm

Toxoplasma Parasite's Family Tree Traced



Agricultural Research Service scientists are tracing the family tree of Toxoplasma gondii--one of the most widespread parasites of warm-blooded vertebrates to help improve methods for controlling the parasite. (Credit: Photo by Jitender P. Dubey)

ScienceDaily (Oct. 21, 2008) — Agricultural Research Service (ARS) scientist Ben Rosenthal is tracing the family tree of Toxoplasma gondii, one of the most widespread parasites of warm-blooded vertebrates. Understanding how T. gondii has evolved and disseminated will help parasitologists and public health officials improve methods for controlling the parasite in humans and animals.

Rosenthal is a zoologist at the ARS Animal Parasitic Diseases Laboratory in Beltsville, Md. He partnered with ARS microbiologist Jitender Dubey and biologist David Sibley at the Washington University in St. Louis School of Medicine to analyze DNA snippets from 46 existing T. gondii strains found around the planet.

The team concluded that all of the current types arose from a common ancestor that lived at least 10 million years ago. This one strain gave rise to four ancient groups of T. gondii — two in South America, one in North America, and one with a global distribution.

By a million years ago, the genetic material from these four ancient groups had been redistributed among 11 distinct groups of T. gondii. These 11 groups, in turn, gave rise to 46 strains found around the world today.

North and South American T. gondii populations have been evolving in almost-complete geographic isolation for one million years. But the team was surprised to find that one of the parasite's chromosomes has spread throughout the American populations within the last 10,000 years.

After studying patterns in its DNA, the scientists concluded that this genetic innovation — which they named Chr1a—probably developed in a single T. gondii strain from North America or Europe. Rosenthal hopes to learn more about why this one adaptation spread throughout the T. gondii family so quickly.

Experts believe that some 25 percent of the global human population is chronically infected with T. gondii. The parasite can cause health complications in individuals with weakened immune systems and in infants who acquire infections in utero from their infected mothers.

Adapted from materials provided by USDA/Agricultural Research Service.

http://www.sciencedaily.com/releases/2008/10/081013200305.htm

Less Ice In Arctic Ocean 6000-7000 Years Ago

Settlement: Astrid Lysså in August 2007 in the ruined settlement left by the Independence I Culture in North Greenland. The first immigrants to these inhospitable regions succumbed to the elements nearly 4000 years ago, when the climate became colder again. (Credit: Eiliv Larsen, NGU)

ScienceDaily (Oct. 20, 2008) — Recent mapping of a number of raised beach ridges on the north coast of Greenland suggests that the ice cover in the Arctic Ocean was greatly reduced some 6000-7000 years ago. The Arctic Ocean may have been periodically ice free.

”The climate in the northern regions has never been milder since the last Ice Age than it was about 6000-7000 years ago. We still don’t know whether the Arctic Ocean was completely ice free, but there was more open water in the area north of Greenland than there is today,” says Astrid Lysså, a geologist and researcher at the Geological Survey of Norway (NGU).

Shore features

Together with her NGU colleague, Eiliv Larsen, she has worked on the north coast of Greenland with a group of scientists from the University of Copenhagen, mapping sea-level changes and studying a number of shore features. She has also collected samples of driftwood that originated from Siberia or Alaska and had these dated, and has collected shells and microfossils from shore sediments.

”The architecture of a sandy shore depends partly on whether wave activity or pack ice has influenced its formation. Beach ridges, which are generally distinct, very long, broad features running parallel to the shoreline, form when there is wave activity and occasional storms. This requires periodically open water,” Astrid Lysså explains.

Pack-ice ridges which form when drift ice is pressed onto the seashore piling up shore sediments that lie in its path, have a completely different character. They are generally shorter, narrower and more irregular in shape.

Open sea

”The beach ridges which we have had dated to about 6000-7000 years ago were shaped by wave activity,” says Astrid Lysså. They are located at the mouth of Independence Fjord in North Greenland, on an open, flat plain facing directly onto the Arctic Ocean. Today, drift ice forms a continuous cover from the land here.

Astrid Lysså says that such old beach formations require that the sea all the way to the North Pole was periodically ice free for a long time.

”This stands in sharp contrast to the present-day situation where only ridges piled up by pack ice are being formed,” she says.

However, the scientists are very careful about drawing parallels with the present-day trend in the Arctic Ocean where the cover of sea ice seems to be decreasing.

"Changes that took place 6000-7000 years ago were controlled by other climatic forces than those which seem to dominate today,” Astrid Lysså believes.

Inuit immigration

The mapping at 82 degrees North took place in summer 2007 as part of the LongTerm project, a sub-project of the major International Polar Year project, SciencePub. The scientists also studied ruined settlements dating from the first Inuit immigration to these desolate coasts.

The first people from Alaska and Canada, called the Independence I Culture, travelled north-east as far as they could go on land as long ago as 4000-4500 years ago. The scientists have found out that drift ice had formed on the sea again in this period, which was essential for the Inuit in connection with their hunting. No beach ridges have been formed since then.

”Seals and driftwood were absolutely vital if they were to survive. They needed seals for food and clothing, and driftwood for fuel when the temperature crept towards minus 50 degrees. For us, it is inconceivable and extremely impressive,” says Eiliv Larsen, the NGU scientist and geologist.

Adapted from materials provided by Geological Survey of Norway.

http://www.sciencedaily.com/releases/2008/10/081020095850.htm

City Trash Plus Farm Leftovers May Yield Clean Energy

For ethanol research, technician David Bozzi weighs pulp recovered from garbage (a sample of which is in the plastic bag, at left) while microbiologist Diana Franqui adds glucose-releasing enzymes to a blend of plant material and pulp suspended in water. On the table, the plastic tray at left contains pulp from garbage; the tray at right holds rice straw--a plant waste left after rice harvest. (Credit: Photo by Peggy Greb)

ScienceDaily (Oct. 20, 2008) — Tomorrow's household garbage might be blended with after-harvest leftovers from fields, orchards, and vineyards to make ethanol and other kinds of bioenergy. Agricultural Research Service (ARS) scientists are investigating this straightforward, eco-friendly strategy in their laboratories at the agency's Western Regional Research Center in Albany, Calif.

In most instances, agricultural wastes like rice straw, almond hulls, and the oversize outer leaves of iceberg lettuce will have to be pretreated before being used as a bioenergy resource. That's according to Kevin Holtman, an ARS research chemist who's working out the details of the garbage-to-gas approach.

The garbage, known as "municipal solid waste," or "MSW," would also be pretreated, Holtman noted.

The garbage would be processed in a jumbo-size autoclave, a device which acts something like a giant pressure cooker to convert the MSW into grey, lightweight clumps. The pretreated agricultural wastes and autoclaved MSW would then be transferred to a biofermenter. Yeasts and enzymes would be added, to make ethanol.

Holtman and colleagues David Bozzi, an engineering technician, and Diana Franqui, a microbiologist, are determining the best ways to use just water and heat, instead of hazardous chemicals, to pretreat the farm wastes, thus keeping the biorefining process environmentally friendly.

The team, part of the Bioproduct Chemistry and Engineering Research Unit at the Albany research center, is collaborating in the research and development venture with Comprehensive Resources, Recovery and Reuse, Inc., or "CR3," of Reno, Nev., and with the Salinas (Calif.) Valley Solid Waste Authority.

Besides producing biofuels, the biorefinery would also reduce the volume at landfills and minimize the need for new ones.

Adapted from materials provided by USDA/Agricultural Research Service.

http://www.sciencedaily.com/releases/2008/10/081013195119.htm

Blood Flow Reversal System Used During Carotid Stenting Is Both Safe And Effective, Study Shows

ScienceDaily (Oct. 20, 2008) — Results of a study on an embolic protection system during carotid stenting that uses a novel blood flow reversal system was reported today during the 20th annual Transcatheter Cardiovascular Therapeutics (TCT) scientific symposium, sponsored by the Cardiovascular Research Foundation (CRF).

L. Nelson Hopkins, MD, Professor and Chairman of Neurosurgery/Professor of Radiology and Director of the Toshiba Stroke Research Center, at the State University of New York at Buffalo presented the results of "EMPiRE: A Multi-center Registry Evaluating Neuroprotection During Carotid Stenting with a Novel Flow Reversal System." The objective of the study is to demonstrate the safety and efficacy of the GORE Flow Reversal System which provides embolic protection by reversing the flow of blood through the ICA, directing embolic particles away from the brain. System components include a balloon sheath and dilator, balloon wire and an external filter.

The study was a prospective, multicenter, single-arm study against objective performance criterion (OPC). The subject population included individuals who were diagnosed with carotid stenosis requiring revascularization and who are at high risk for AEs from CEA. The study included 245 subjects enrolled at 28 sites; the enrollment period was from July 2006 to July 2008.

The mean age for study participants was 70; 16% or 38 patients were octogenarians and 165 were male. Seventy-eight were symptomatic and 167 were asymptomatic. In terms of medical history, 31% were current tobacco users, 35% had diabetes, 38% had respiratory ailments, 42% had coronary disease, 82% had hyperlipidema and 87% suffered from hypertension.

The mean procedure time was 80 minutes (25 minimum and 345 maximum) with a mean flow reversal time of 15 minutes. The mean hospital stay was 1 day (24 maximum).

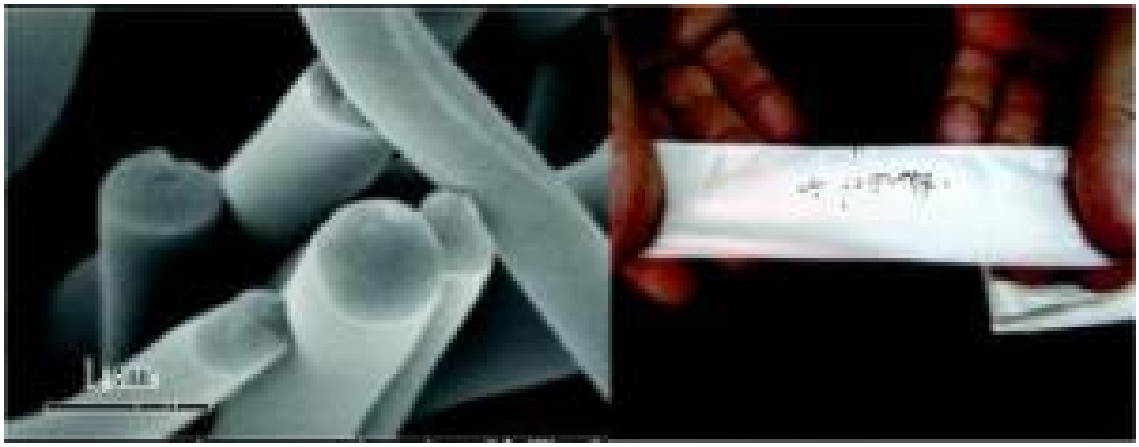
According to researchers, the EMPiRE study met its study primary endpoint with a low death rate of 0.8%, low death/stroke rate of 2.0% and low major adverse event (MAE) rate of 3.7%. The GORE Flow Reversal System itself had a technical success rate of 96.3% (236 patients). Just 6 subjects (2.4%) were unable to tolerate the procedure but there were no permanent neurological deficits and intolerance was resolved when the balloons were deflated. The failure rate of 3.7% (9 patients) was due to such factors as balloon sheath rupture, tortuous anatomy, inability to position the device and patient inability to tolerate flow reversal.

In summarizing the conclusions from EMPiRE, Dr. Hopkins said, "The GORE Flow Reversal System is safe and efficacious for embolic protection during carotid angioplasty and stenting. And, it offers potential advantages over other embolic protection devices in that embolic debris is directed away from the brain, it is not necessary to cross target lesions unprotected and it provides an option for patients with unsuitable anatomy for distal embolic protection (e.g., tortuous IC or limited landing zone)."

Adapted from materials provided by Cardiovascular Research Foundation, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2008/10/081016162248.htm

Spinning Natural Proteins Into Fabrics For New Wound-repair Products



Natural protein from cow's blood may lead to improved sutures and bandages for treating wounds. (Credit: American Chemical Society)

ScienceDaily (Oct. 20, 2008) — Scientists in Israel are reporting the first successful spinning of a key natural protein into strong nano-sized fibers about 1/50,000th the width of a human hair. The advance could lead to a new generation of stronger, longer-lasting biocompatible sutures and bandages to treat wounds.

Eyal Zussman and colleagues point out that researchers have tried for years to develop wound repair materials from natural proteins, hoping that such fibers would be more compatible with body tissue than existing materials. Scientists recently focused on producing these fibers through "electrospinning," a high-tech weaving process that uses electrical charges to draw out nano-sized fibers from a liquid. But the approach has achieved poor results until now.

In the new study, the scientists describe a new method for producing electrospun polymers using bovine serum albumin (BSA), a so-called "globular" protein found in cow's blood. BSA is similar to serum albumin, one of the most abundant proteins in the human body. The method involves adding certain chemicals to a solution of BSA to loosen the bonds that hold these highly-folded proteins together.

That results in a thinner, more spinnable protein solution. Using electrospinning, the process resulted in strong fibers that are easily spun into suture-like threads or thick mats resembling conventional wound dressings. This approach is being followed by the groups of Zvi Nevo and Abraham Katzir at Tel-Aviv University, the researchers said, noting that the new method also can be applied to other types of natural proteins.

Journal reference:

1. Dror et al. **Nanofibers Made of Globular Proteins**. *Biomacromolecules*, 2008; 9 (10): 2749 DOI: 10.1021/bm8005243

Adapted from materials provided by American Chemical Society.

http://www.sciencedaily.com/releases/2008/10/081020094447.htm

Enlarged Prostates: Choice Of Treatment Needs Careful Consideration

ScienceDaily (Oct. 20, 2008) — In the last few years, the treatment options for prostate problems have expanded. The German Institute for Quality and Efficiency in Health Care (IQWiG) has assessed new treatments and warns that some new surgical techniques are being heavily promoted without first having been adequately evaluated.

Informed choices are essential

For many men, the symptoms of this condition are just annoying. But for some men, an enlarged prostate means going to the toilet so often that a good night's sleep has become a thing of the past. Most of the time the cause is an enlarged prostate, a condition doctors call "benign prostatic hyperplasia". One in five men in their 50s are affected - and the majority of men in their 70s will have symptoms.

The treatment choices have greatly expanded in recent years. However IQWiG's evaluation of the research raises questions about many surgical techniques. According to the Institute's Director, Professor Peter Sawicki, "Not everything that is new is necessarily an improvement. Better information is necessary to help men and their doctors weigh up the advantages and disadvantages of the various treatments."

To that end, IQWiG has published easy-to-understand summaries of the research in this area on IQWiG's website for the public, http://www.informedhealthonline.org. Included is information on managing prostate symptoms, medicines and surgical options as well as the stories of men who have used different treatments.

Most men with BPH symptoms will never need surgery

According to researchers' best estimates, about 3 out of every 10 men in Europe will handle their prostate symptoms without medication or surgery and perhaps only 1 in 10 will have surgery. The rest will use medications, including herbal medicines, if their symptoms become too troublesome.

"In Germany and other European countries, drugs called alpha blockers have taken over as the most common treatment choice for benign prostatic hyperplasia," said Professor Sawicki. "These drugs were originally developed to reduce high blood pressure, but prostate symptoms will also improve at least a little for 60% of the men who use them."

In analysing the research results for surgery, the Institute concluded that the original surgical procedures still have the best results. A few of the new surgical techniques appear to have good results - for example, possibly shortening the time needed in hospital. But more research is needed to confirm this. And most of the new techniques use equipment that has not yet been tested in enough trials.

"Prostate surgery can be very effective, but the adverse effects are a major concern for many men. Some of the newer techniques might have fewer adverse effects, but they may be so much less effective that the symptoms return, as bad as ever, within a couple of years," Professor Sawicki said.

Adapted from materials provided by Institute for Quality and Efficiency in Health Care.

http://www.sciencedaily.com/releases/2008/10/081017150734.htm

Dinosaur Dance Floor: Numerous Tracks at Jurassic Oasis on Arizona-Utah Border

Geologist Winston Seiler with some of the dinosaur tracks he identified for his thesis as a University of Utah master's degree student. The impressions once were thought to be potholes eroded by water. But Seiler and Marjorie Chan, chair of geology and geophysics at the University of Utah, published a scientific paper in the October 2008 issue of the journal Palaios identifying the abundant impressions as comprising a large dinosaur "trample surface" in northern Arizona. There are so many tracks they wryly refer to the site as "a dinosaur dance floor." (Credit: Nicole Miller)

ScienceDaily (Oct. 20, 2008) — University of Utah geologists identified an amazing concentration of dinosaur footprints that they call "a dinosaur dance floor," located in a wilderness on the Arizona-Utah border where there was a sandy desert oasis 190 million years ago.

The three-quarter-acre site – which includes rare dinosaur tail-drag marks – provides more evidence there were wet intervals during the Early Jurassic Period, when the U.S. Southwest was covered with a field of sand dunes larger than the Sahara Desert.

Located within the Vermilion Cliffs National Monument, the "trample surface" (or "trampled surface") has more than 1,000 and perhaps thousands of dinosaur tracks, averaging a dozen per square yard in places. The tracks once were thought to be potholes formed by erosion. The site is so dense with dinosaur tracks that it reminds geologists of a popular arcade game in which participants dance on illuminated, moving footprints.

"Get out there and try stepping in their footsteps, and you feel like you are playing the game 'Dance Dance Revolution' that teenagers dance on," says Marjorie Chan, professor and chair of geology and geophysics at the University of Utah. "This kind of reminded me of that – a dinosaur dance floor – because there are so many tracks and a variety of different tracks."

"There must have been more than one kind of dinosaur there," she adds. "It was a place that attracted a crowd, kind of like a dance floor."

A study identifying the dinosaur track site was published in the October issue of the international paleontology journal Palaios. Chan is senior author of the study, which was conducted for a master's degree thesis by former graduate student Winston Seiler, who now works at Chevron Inc., in Bakersfield, Calif.

Seiler says the range of track shapes and sizes reveals at least four dinosaur species gathered at the watering hole, with the animals ranging from adults to youngsters.

"The different size tracks [1 inch to 20 inches long] may tell us that we are seeing mothers walking around with babies," he says.

The site – a 6-mile roundtrip hike from the nearest road – is in Arizona in the Coyote Buttes North area of the Paria Canyon-Vermilion Cliffs Wilderness, which is part of the U.S. Bureau of Land Management's (BLM) Vermilion Cliffs National Monument. The track site – about halfway between Kanab, Utah, and Page, Ariz. – is near a popular wind-sculpted sandstone attraction known as the Wave.

A Dense Collection of Dinosaur Footprints – and a Few Tail Drags

Chan says the new study is the first scientific publication to identify the impressions as dinosaur footprints on a trample surface.

As part of the study, Seiler marked off 10 random plots, each of 4 square meters, or roughly 2 yards by 2 yards. He counted 473 tracks within those plots – an average of 12 per square meter. He conservatively estimates the 3,000-square-meter site (about 0.75 acres) has more than 1,000 tracks, but he and Chan believe there perhaps are thousands.

Numerous dinosaur track sites have been found in the western United States, including more than 60 in Navajo Sandstone, where actual dinosaur bones are rare.

"Unlike other trackways that may have several to dozens of footprint impressions, this particular surface has more than 1,000," Seiler and Chan wrote. And they say the density of tracks is much greater than it is at even larger track sites, such as the one at Coral Pink Sand Dunes State Park in Utah.

The dinosaur tracks and tail marks near the Wave were preserved in the vast Navajo Sandstone Formation. But unlike the dunes that make up much of the Navajo Sandstone, the tracks are within what was a wet, low watering hole between the dunes.

"We're looking at an area much like the Sahara Desert with blowing sand dunes," Seiler says. "Areas between these sand dunes could have had ponds – oases."

The 2.4-inch-wide tail-drag marks – which are up to 24 feet long – are a special discovery because there are fewer than a dozen dinosaur tail-drag sites worldwide, Seiler says. Four tail drags were within the 10 plots he surveyed, and there are others nearby.

"Dinosaurs usually weren't walking around with their tails dragging," he says.

Potholes – or Prints from Four Kinds of Dinosaurs?

Chan first visited the site of the dinosaur tracks in 2005 with a BLM ranger who was puzzled by them. Chan initially called them potholes, which are erosion features common in desert sandstone, "but I knew that wasn't the whole story because of the high concentration and because they weren't anywhere else nearby but along that one surface."

Seiler first saw the site in 2006. "At first glance, they look like weathering pits – a field of odd potholes," he says. "But within about five minutes of wandering around, I realized these were dinosaur footprints."

One anonymous reviewer of the Palaios study still believes the holes are erosion features. The study argues the impressions are from dinosaurs because:

They are the correct size for tracks made by big animals, and are limited to a single rock bed.

Four different kinds of footprint shapes are seen repeatedly in 14 percent of the impressions, and they include obvious claw, toe and heel marks. The other impressions "are clearly similar."

One-third of the prints are surrounded by small ridges or mounds. Such features would be expected when animals stepped in wet sand.

The tracks "are rarely flat and are typically oriented at an angle into the sediment … and indicate a clear direction of travel" to the west-southwest. Seiler says the direction the dinosaurs walked "either was dictated by the large dunes that bounded this wet area, or it could be communal behavior, like walking together as a pack."

About one-eighth of the tracks show "overprinting," in which a dinosaur stepped in the footprint of another or even in its own prints.

"While these impressions may be mistaken for potholes caused by weathering, close examination reveals many footprint features," Seiler says.

Dinosaur footprints are named by their shape because the animals that made them haven't been identified. Four kinds of footprints were found on the trample surface:

Eubrontes footprints measure 10 inches to 16 inches long and have three toes and a heel. Eubrontes tracks are believed to have been made by upright-walking dinosaurs 16 to 20 feet long, or smaller than Tyrannosaurus rex.

Grallator tracks are about 4 inches to 7 inches long, are three-toed and were left by small dinosaurs only a few feet tall.

Sauropodomorph dinosaur tracks, which are more circular than the other types, were left by creatures that walked on four legs and were the largest dinosaurs at the site. Their tracks range from 6 inches to 11 inches long. Seiler says the tail-drag marks are associated with these circular footprints, so they likely were made by sauropods.

Anchisauripus tracks measure 7 inches to 10 inches long and were made by dinosaurs that ranged from 6 feet to 13 feet in length.

An Oasis for Dinosaurs in a Vast Desert of Dunes

When the footprints were made 190 million years ago, "the continents were arranged so this area was in the tropics" and was part of the supercontinent named Pangaea, says Seiler. "It was a desert, like the

Sahara but much larger than the Sahara is today," covering much of Utah, Wyoming, Colorado, New Mexico, Arizona and Nevada.

"Some studies indicate winds probably were much stronger than normal because all the continents were together," says Chan. "That's why you had monster dunes."

"To support large dinosaurs, there probably wasn't just one watering hole for them to go to, but many," Seiler says. "They wandered between a network of watering holes for food and water."

In that sense, the trample surface is not "just a wet pond," but "it's possibly a record of global climate change" – a shift from drier to wetter conditions, Chan says.

She says the traditional view is that the Navajo Sandstone represents "a vast, dry uninhabitable desert. But now we are seeing there are a lot of variations, and there were periods when dinosaurs were living there."

Seiler envisions the dinosaurs were "happy to be at this place, having wandered up and down many a sand dune, exhausted from the heat and the blowing sand, relieved and happy to come to a place where there was water."

The trample surface "helps paint a picture of what it was like to live back then," he says. "Tracks tell us what the dinosaurs were doing, what their behavior was, what life was like for them, what they did on a day-to-day basis."

After the dinosaurs left their prints, the trample surface was covered by shifting dunes, which eventually became Navajo Sandstone. Then, the rock slowly eroded away, exposing the tracks. The tracks eventually will erode too, Seiler says.

Adapted from materials provided by University of Utah.

http://www.sciencedaily.com/releases/2008/10/081020093414.htm

Potential Treatment To Prevent Diabetes And Obesity Using Interleukin-6

ScienceDaily (Oct. 20, 2008) — A molecule called interleukin-6 has opened new doors for the creation of new drugs against obesity and diabetes.

This is the conclusion of an international project which has had the participation of researchers from Vitagenes, a company which forms part of the Campus program promoted by the University of Granada (UGR) and situated in the Technological Park of Health Sciences (PTS).

Vitagenes has collaborated in this project through its technical director, doctor José Luis Mesa, who has been one of the main authors of the study together with distinguished scientists of the University of Melbourne and the Baker Heart Research Institute (Australia). The most relevant results of the project, such as a potential treatment to prevent diabetes and obesity, have been published in the international scientific Journal of Endocrinology.

An (un)known molecule

The main discovery has been the change of the paradigm of a molecule called interleukin-6 in the prevention of obesity and diabetes. Up to now, scientific evidence suggested that interleukin-6, chronically high in obese persons and diabetics, could be harmful for obesity and diabetes; however, this study proves exactly the opposite.

"No study had tried to inject interleukin-6 directly to analyse if this molecule was really harmful or, to the contrary, could help to prevent obesity and diabetes" José Luis Mesa points out. He explains that "our hypothesis was that interleukin-6 was naturally high in diabetic and obese persons precisely to combat such diseases. In order to prove it, we injected human recombinant interleukin-6 daily for two weeks and analysed its behaviour and its effects on the metabolism".

Mark Febbraio, scientific director in the Baker Heart Research Institute and a member of the Advisory Scientific Committee of Vitagenes, points out that "we obtained surprising results. The exogenous administration of interleukin-6 improved insulin sensitivity and the absorption of glucose, essential for diabetics". In addition, according to Mesa, "interleukin-6 also increased the expression of important genes related to fats metabolism, such as PPAR and UCP2. This suggests that interleukin-6 could be involved in the metabolic control of body weight".

However, Vitagenes has also reported that this is a preliminary study carried out in animal models, and we need new studies in humans to establish definite conclusions, "although everything seems to indicate that the application in humans would be possible in the medium term. This could substantially improve the state of people with diabetes and obesity", points out Mesa.

Vitagenes is a company emerged from the University of Granada and pioneer in the research and development of genetic applications to improve health and well-being. It is located in the Technological Park of Health Sciences and is supported by the Andalusian Council and the Ministry of Industry.

Adapted from materials provided by University of Granada - Communications Department, via AlphaGalileo.

http://www.sciencedaily.com/releases/2008/10/081017082009.htm

Listening To Dark Matter: New Clues From Lab Deep Underground

Each PICASSO detector module contains freon droplet loaded gel in an acrylic cylinder. The acoustic signal from particle interactions with the droplets are detected by an array of microphones on the exterior of each module. (Credit: Image courtesy of SNOLAB)

ScienceDaily (Oct. 20, 2008) — A team of researchers in Canada have made a bold stride in the struggle to detect dark matter. The PICASSO collaboration has documented the discovery of a significant difference between the acoustic signals induced by neutrons and alpha particles in a detector based on superheated liquids.

Since neutron induced signals are very similar to dark matter induced signals, this new discovery could lead to improved background suppression in dark matter searches with this type of detector.

So far, alpha particles have been an obstacle to the detection of dark matter's weakly interacting massive particles (WIMPs) in PICASSO. This detector, which is based on the operation principle of the classic bubble chamber, is sensitive to alpha particles over exactly the same temperature and energy range, therefore making it very difficult to discriminate between the two types of particles.

Alpha particles are relatively common on Earth, emitted by radioactive nuclei such as uranium, and thorium, and are therefore also present in traces in the detector material itself. WIMPs are thought to fill the large spaces between galaxies, concentrating around them in gigantic clouds. As the Earth moves together with the sun through the Milky Way's dark matter cloud, researchers hope to detect occasional collisions of a WIMP particle with an atom in their detectors.

Teams of researchers around the globe work deep underground to create the best conditions to isolate WIMPs from their travelling companions, namely neutrons, which are created by cosmic rays. Underground, teams in the US, Canada, England, Italy, Japan, Korea and Russia have long been sparring over the best detection methods for WIMPs.

The Canadian-American-Czech team based at SNOLAB, using their PICASSO detector, experimented with very sensitive Fluorine-based superheated liquids and analysed acoustic signals following phase transitions induced by alpha particles and WIMP like, neutron induced recoil nuclei. To their surprise they found a significant difference in amplitudes of the acoustic signals, which has never been observed before.

As experiment spokesperson Viktor Zacek (Université de Montréal) said, "When we looked at our calibration data taken with neutrons and compared them with our alpha background data we saw a peculiar difference which we attributed first to some detector instabilities or gain drifts in our electronics. However when we checked the data and refined the analysis the discrimination effect became even more pronounced."

Detection of WIMPs is the first challenge in the struggle to understand dark matter. Much of our understanding until now has been hypothetical. There is convincing astronomical evidence to suggest that 23 per cent of the Universe is made up of dark matter – different from the matter with protons, neutrons and electrons that we are accustomed to.

This dark matter is between a hundred to a thousand times heavier than a proton and interacts extremely weakly with itself and 'ordinary' matter. It is believed it was created during the Big bang and that it now surrounds most galaxies, and also our Milky Way in gigantic clouds.

Journal reference:

1. F Aubin et al. **Discrimination of nuclear recoils from alpha particles with superheated liquids**. *New Journal of Physics*, October 16, 2008 DOI: 10.1088/1367-2630/10/10/103017

Adapted from materials provided by Institute of Physics.

http://www.sciencedaily.com/releases/2008/10/081016074659.htm

New Natural Products Act Against Antibiotic-resistant Bacteria

HZI biologist Dr. Herbert Irschik (left) and HZI chemist Dr. Rolf Jansen (right). (Credit: Image courtesy of Helmholtz Centre for Infection Research)

ScienceDaily (Oct. 20, 2008) — A group of antibiotic natural products discovered at the Helmholtz Centre for Infection Research (HZI) in Braunschweig points to a new mode of action against pathogenic bacteria. Isolated from myxobacteria, the substances prevent an enzyme of the pathogens from being able to translate their genetic material. In this way, the propagation of bacteria – such as tuberculosis pathogens – is inhibited.

A working group at Rutgers University in New Jersey has now joined up with HZI researchers and discovered in detail how these compounds interact with the target in pathogenic bacteria. The novel target is different from the target of known antibiotics such as rifamycin, a standard medication to counteract tuberculosis.

This discovery makes the Braunschweig natural products extremely interesting candidates for a development as antibiotics – especially in view of the fact that the substances also kill bacterial strains that are resistant to antibiotics. Today, the scientists publish their results in the distinguished journal "Cell".

Antibiotics are an essential tool of medicine. We owe the antibiotics that diseases such as plague, cholera or tuberculosis are a thing of the past, at least in the industrialised world.

However, more and more bacteria are becoming resistant to medication. Consequently, doctors are in urgent need of new antibiotics. Their development is a demanding challenge: the drugs should attack the bacteria only but not interact with human cells. Subsequently, the number of effective antibiotic targets in bacteria is severely limited; every new active compound is warmly welcomed by the antibiotics researchers, especially if it highlights a new mode of action.

In the search for candidates which might be developed into such novel medicines the HZI enjoys a strong advantage: the institute has a unique collection of natural substances which has proved to be a highly effective source of drug candidates in the past. For example, the collection provided epothilone, which was approved as cancer medication last year. These substances are produced by myxobacteria, a group of microorganisms living in the soil.

The origin of the current success story is outlined by HZI biologist Dr. Herbert Irschik: "In our fundus we have three substances – myxopyronin, corallopyronin and ripostatin – which were isolated and characterised chemically and biologically. Already many years ago we recognized their unusual antibiotic effect. It was directed in an unknown manner against the bacterial RNA polymerase, i.e. the enzyme that reads the DNA of the pathogen. In eukaryontic cells, which human cells are also belonging to, the substances do not attack the RNA polymerase." However, before the initial evidence turned the substances into true antibiotic candidates, scientists had to reveal precisely how the growth of the bacteria was inhibited. "We began to develop a biotechnological processes which enabled us to produce and isolate the myxobacterial natural substances in large quantities," explains HZI chemist Dr. Rolf Jansen, who was also involved in the study.

Afterwards, the collaboration with the US research group at Rutgers University came off. The structural biologists studied the interaction of the HZI substances with the RNA polymerase. The results supported the indication that the natural substances block the bacterial RNA polymerase in a new manner: the natural substances append to another location within the RNA polymerase than the antibiotics previously investigated.

They attach to the enzyme – which looks like an open crab claw – directly at its joint position. Subsequently the enzyme is no longer able to open the claw. By this mechanism of action the active substances prevent the RNA polymerase from adhering to the DNA – reading of the genetic materials is suppressed completely. This new mechanism also operates in bacteria that are resistant to conventional antibiotics.

For Jansen and Irschik the results of the US researchers signalize that their substances now are facing a long process of development: " In their present form myxopyronin, corallopyronin and ripostatin are not yet applicable as antibiotics," explains Irschik. Further chemical development is now required, as Jansen adds: "Our natural agents are so-called chemical leads, which the chemists will modify in detail in order to increase their antibiotic action and minimize side-effects. This development will include extensive testing, which may take several years, before the new medicine will reach the hands of doctors finally."

Adapted from materials provided by Helmholtz Centre for Infection Research.

http://www.sciencedaily.com/releases/2008/10/081017082013.htm

Gene Mutation Protects Against Obesity And Diabetes

The New Zealand obese mouse gains weight rapidly under a high-fat diet and develops obesity, whereby the proportion of body fat can increase to over 40 percent. The mouse strain is a model for the human metabolic syndrome and its complications. (Credit: Image courtesy of German Institute of Human Nutrition Potsdam-Rehbruecke (DIfE))

ScienceDaily (Oct. 20, 2008) — A group of researchers from the German Institute of Human Nutrition* led by Hadi Al-Hasani and Hans-Georg Joost has identified a natural mutation in the Tbc1d1 gene that keeps mice lean and also protects against diabetes despite a high-fat diet. The researchers were thus able to gain a deep insight into the function of the gene.

Further clarification of its function would provide a basis for developing new approaches for prevention and treatment, as this gene could also be linked to obesity and diabetes in humans.

The mutation that knocks out the Tbc1d1 gene causes increased fat uptake in skeletal muscle and, at the same time, boosts fat oxidation. On the other hand, glucose uptake of muscles is reduced. “This shows that the normal Tbc1d1 gene has a very important function in fat and glucose metabolism and therefore plays an essential role in regulation of energy metabolism“, explains Hadi Al-Hasani.

“Not only how much food we eat but also how our body uses it is decisive for development of obesity and diabetes“, says Hans-Georg Joost, Scientific Director of DIfE. When the relation between glucose and fat oxidation shifts so that the muscles use more fat and less glucose as a source of energy, this is energetically less efficient. As a result, the body stores less fat. This lowers the risk for obesity and consequently also for diabetes.

In Germany, 66 percent of the men and 50.6 percent of the women are already overweight or obese. In the USA, even three-fourths of adults “break the bathroom scales“, according to the latest reports. Overweight increases significantly the risk of heart attack, stroke, intestinal cancer, and type-2 diabetes. At present, more then seven percent of Germans are diabetic and this number will increase even more due to the growing number of overweight persons.

Studies in animals and humans have shown that there is a relation between overweight, type-2 diabetes, diet, and genes. Researchers suspect that natural variants of at least 50 genes are involved in the development of overweight. As for diabetes, probably more than 100 genes are involved. Only very few of these genes and variants are known to date. In addition, they form a functional, interacting network with environmental variables that is incompletely understood.

Since humans and mice are genetically very similar, the researchers of DIfE use the mouse model to identify genes involved in the development of overweight and diabetes. If an "overweight gene" has been discovered which plays a role in both species, then the researchers can investigate its function and the basic molecular mechanisms in animal models under controlled conditions. Such studies often cannot be carried out in humans for ethical as well as practical reasons. The results from the animal model studies can then be used to develop new medications for treatment of obesity and diabetes.

Background information

About the study: The researchers identified the mutation on the Tbc1d1-gene by means of back-crossing experiments. Then the genetic makeup of two very different mouse strains was compared. The New Zealand obese mouse gains weight rapidly under a high-fat diet (60 percent fat) and develops obesity, whereby the proportion of body fat can increase to over 40 percent. Despite a very high fat diet, the mice of the Swiss Jim Lambert strain did not gain weight but stayed lean, due to their genetic makeup.

Seven base pairs are missing in the mutated Tbc1d1 gene of the Swiss Jim Lambert strain. These changes lead to the synthesis of a shortened Tbc1d1 protein molecule and, most likely, loss of enzyme activity. The Tbc1d1 protein molecule is located mainly in skeletal muscle. Researchers have found smaller amounts in heart, pancreas, intestine, kidney, and hypothalamus. It is not found in fatty tissue or liver.

*Deutsches Institut für Ernährungsforschung Potsdam-Rehbrücke, DIfE

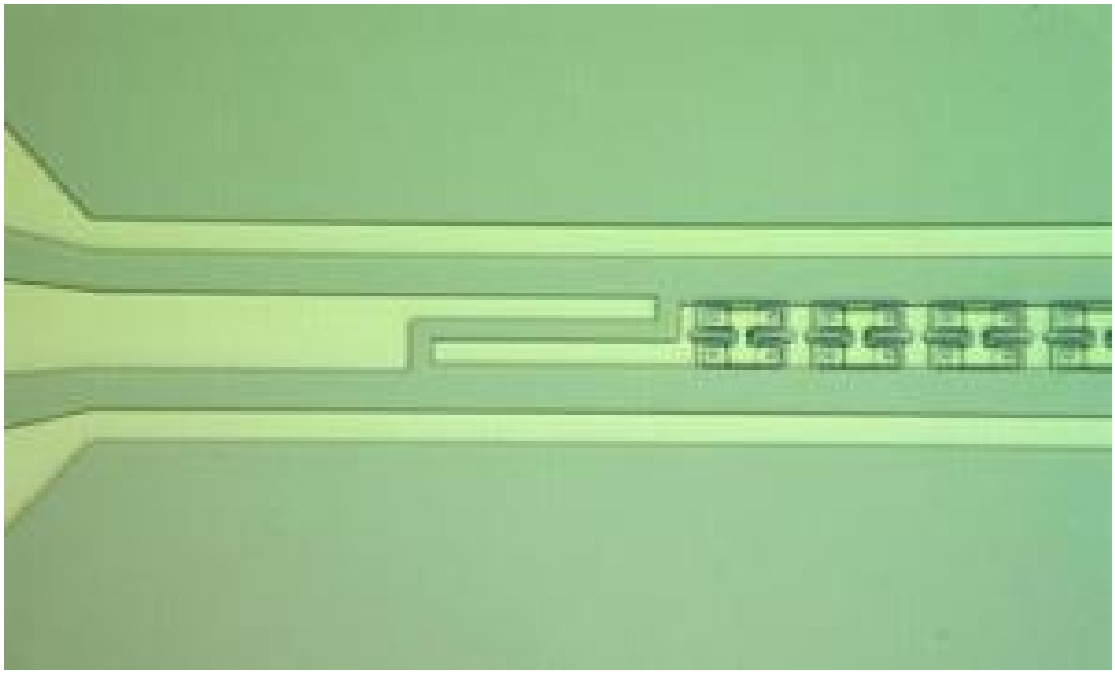
Journal reference:

1. Chadt et al. **Tbc1d1 mutation in lean mouse strain confers leanness and protects from diet-induced obesity**. *Nature Genetics*, October 19, 2008; DOI: 10.1038/ng.244

Adapted from materials provided by German Institute of Human Nutrition Potsdam-Rehbruecke (DIfE), via AlphaGalileo.

http://www.sciencedaily.com/releases/2008/10/081019184802.htm

First Tunable, 'Noiseless' Amplifier May Boost Quantum Computing, Communications



In the JILA/NIST "noiseless" amplifier, a long line of superconducting magnetic sensors (beginning on the right in this photograph) made of sandwiches of two layers of superconducting niobium with aluminum oxide in between, creates a 'metamaterial' that selectively amplifies microwaves based on their amplitude rather than phase. (Credit: M. Castellanos-Beltran/JILA)

ScienceDaily (Oct. 20, 2008) — Researchers at the National Institute of Standards and Technology (NIST) and JILA, a joint institute of NIST and the University of Colorado (CU) at Boulder, have made the first tunable “noiseless” amplifier. By significantly reducing the uncertainty in delicate measurements of microwave signals, the new amplifier could boost the speed and precision of quantum computing and communications systems.

Conventional amplifiers add unwanted “noise,” or random fluctuations, when they measure and boost electromagnetic signals. Amplifiers that theoretically add no noise have been demonstrated before, but the JILA/NIST technology, described in Nature Physics, offers better performance and is the first to be tunable, operating between 4 and 8 gigahertz, according to JILA group leader Konrad Lehnert. It is also the first amplifier of any type ever to boost signals sufficiently to overcome noise generated by the next amplifier in a series along a signal path, Lehnert says, a valuable feature for building practical systems.

Noisy amplifiers force researchers to make repeated measurements of, for example, the delicate quantum states of microwave fields—that is, the shape of the waves as measured in amplitude (or power) and phase (or point in time when each wave begins). The rules of quantum mechanics say that the noise in amplitude and phase can’t both be zero, but the JILA/NIST amplifier exploits a loophole stipulating that if you measure and amplify only one of these parameters—amplitude, in this case—then the amplifier is theoretically capable of adding no noise. In reality, the JILA/NIST amplifier adds about half the noise that would be expected from measuring both amplitude and phase.

The JILA/NIST amplifier could enable faster, more precise measurements in certain types of quantum computers—which, if they can be built, could solve some problems considered intractable today—or quantum communications systems providing “unbreakable” encryption. It also offers the related and

useful capability to “squeeze” microwave fields, trading reduced noise in the signal phase for increased noise in the signal amplitude. By combining two squeezed entities, scientists can “entangle” them, linking their properties in predictable ways that are useful in quantum computing and communications. Entanglement of microwave signals, as opposed to optical signals, offer some practical advantages in computing and communication such as relatively simple equipment requirements, Lehnert says.

The new amplifier is a 5-millimeter-long niobium cavity lined with 480 magnetic sensors called SQUIDs (superconducting quantum interference devices). The line of SQUIDs acts like a “metamaterial,” a structure not found in nature that has strange effects on electromagnetic energy. Microwaves ricochet back and forth inside the cavity like a skateboarder on a ramp. Scientists tune the wave velocity by manipulating the magnetic fields in the SQUIDs and the intensity of the microwaves. An injection of an intense pump tone at a particular frequency, like a skateboarder jumping at particular times to boost speed and height on a ramp, causes the microwave power to oscillate at twice the pump frequency. Only the portion of the signal which is synchronous with the pump is amplified.

Funding for the research was provided by NIST, the National Science Foundation, and a NIST-CU seed grant.

Journal reference:

1. Castellanos-Beltran et al. **Amplification and squeezing of quantum noise with a tunable Josephson metamaterial**. *Nature Physics*, October 5, 2008; DOI: 10.1038/nphys1090

Adapted from materials provided by National Institute of Standards and Technology.

http://www.sciencedaily.com/releases/2008/10/081015183506.htm

Alternative Energy: New Sugarcanes To Deliver One-Two Energy Punch

New varieties of sugarcane are being developed that are especially good for use in making ethanol. (Credit: Image courtesy of USDA/Agricultural Research Service)

ScienceDaily (Oct. 20, 2008) — New varieties of sugarcane and other crops adapted to the U.S. Gulf Coast region are being developed for use in making ethanol as a cleaner-burning alternative to gasoline.

Agricultural Research Service (ARS) scientists, in cooperation with the Louisiana Agricultural Experiment Station (LAES) and the American Sugar Cane League, USA (ASCL), have already released three new varieties of "energy sugarcane." They're called that because of their high stalk contents of sugar and fiber, which could eventually serve as complementary ethanol feedstocks.

Raw-sugar processors now burn the fiber to generate heat that powers stalk-crushing and sugar-crystallization processes, notes Edward Richard, who leads the ARS Sugarcane Research Unit in Houma, La. The extracted sucrose sugar is sold for consumption or converted into ethanol. However, Richard anticipates that biorefineries will use the fiber as well, once technologies for converting cellulose into ethanol become economically feasible.

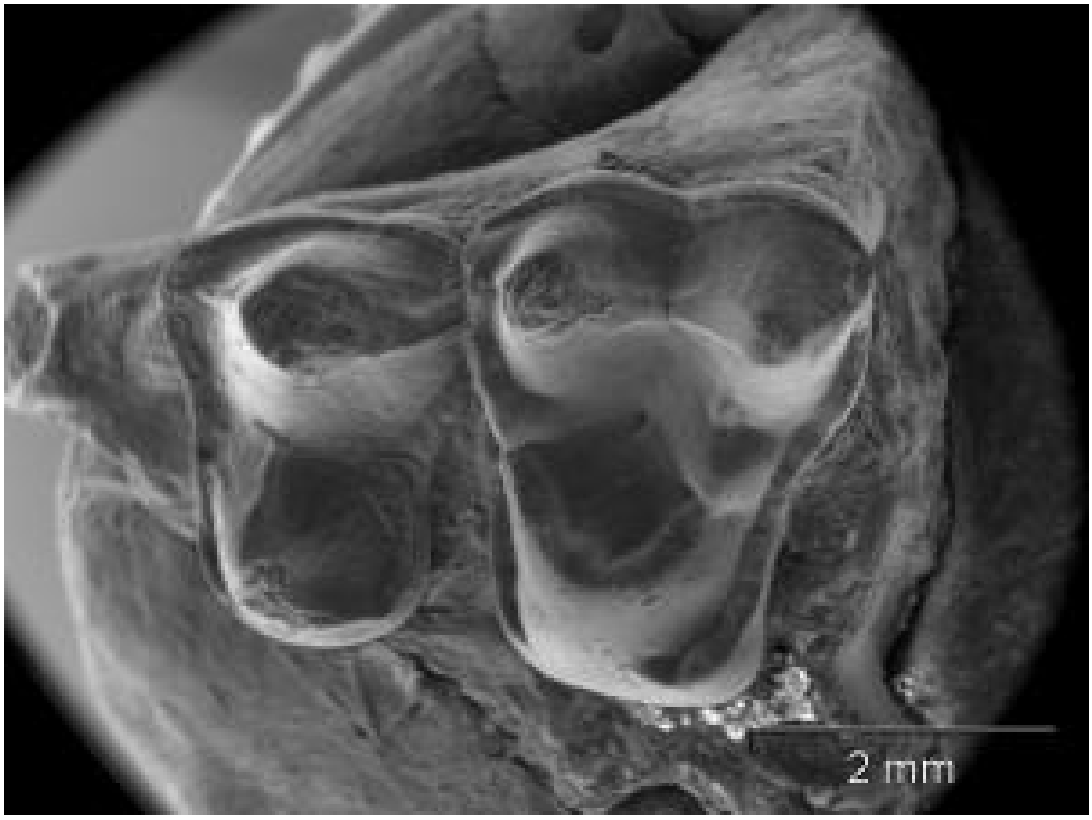
The three new energy sugarcanes--one high fiber/low sucrose and two high sucrose/high-fiber varieties--were released in April 2007 by ARS, LAES and ASCL as part of a cooperative breeding program. The releases also reflect ARS' push to exploit region-specific crops as feedstocks that will sustain localized production of biobased fuels and energy.Corn, especially that grown in the Midwest, is a staple feedstock for ethanol production. But in southern Louisiana, soil conditions are more amenable to sugarcane and sweet sorghum. Sugarcane also offers a key processing advantage over corn-based ethanol production: Cane sugars needn't be derived from starch using cooking steps and enzymes. Rather, the sugar can be directly fermented into ethanol as soon as the sugar is extracted from stalks.

Richard estimates an acre planted to one of the three energy sugarcanes could yield nearly 1,240 gallons of ethanol using both the sugar and fiber. To extend sugarcane's growing and processing season and production range further to the north, his lab also is developing cold-tolerant varieties of the crop.

Adapted from materials provided by USDA/Agricultural Research Service.

http://www.sciencedaily.com/releases/2008/10/081013194043.htm

New Fossil Reveals Primates Lingered In Texas



Chris Kirk and Blythe Williams have discovered Diablomomys dalquesti, a new genus and species of primate that dates to 44-43 million years ago when tropical forests and active volcanoes covered west Texas. (Credit: Image courtesy of University of Texas at Austin)

ScienceDaily (Oct. 20, 2008) — More than 40 million years ago, primates preferred Texas to northern climates that were significantly cooling, according to new fossil evidence discovered by Chris Kirk, physical anthropologist at The University of Texas at Austin.

Kirk and Blythe Williams from Duke University have discovered Diablomomys dalquesti, a new genus and species of primate that dates to 44-43 million years ago when tropical forests and active volcanoes covered west Texas.

During the early part of the Eocene epoch, primates were common in the tropical forests that covered most of North America. Over time, however, climatic cooling caused a dramatic decline in the abundance and diversity of North American primates. By the end of the Eocene, primates and most tropical species had almost disappeared from North America.

Kirk's discovery of late middle Eocene (Uintan) primates at the Devil's Graveyard Formation in Southwest Texas reveals new information about how North American primates evolved during this period of faunal (animal) reorganization.

"After several years of collecting new fossils, reviewing Texas' primate community and comparing it to other places in North America, we found a much more diverse group of primate species in Texas than we expected," Kirk said. "It seems that primates stuck around in Texas much longer than many other parts of

the continent because the climate stayed warm for a longer period of time. While primate diversity was falling off precipitously in places like Utah and Wyoming during the late middle Eocene, west Texas provided a humid, tropical refuge for primates and other arboreal (tree-inhabiting) animals."

The anthropologists named the new primate Diablomomys dalquesti, combining "Diablo" to represent the Devil's Graveyard Formation (sand- and mudstones near Big Bend National Park) with Omomys, a related fossil genus. The dalquesti species name honors Walter and Rose Dalquest, who donated the land on which the fossil was collected (Midwestern State University's "Dalquest Research Site"). Walter was a Texas paleontologist and distinguished biology professor at Midwestern State University in Wichita Falls until his death in 2000.

Journal reference:

1. Williams et al. **New Uintan primates from Texas and their implications for North American patterns of species richness during the Eocene**. *Journal of Human Evolution*, October 2008; DOI: 10.1016/j.jhevol.2008.07.007

Adapted from materials provided by University of Texas at Austin.

http://www.sciencedaily.com/releases/2008/10/081014111401.htm

Steroids Aid Recovery From Pneumonia, Researchers Say

Dr. Robert Hardy has demonstrated in mice that using corticosteroids as well as traditional antimicrobial therapy might eventually help people with pneumonia recover more quickly. (Credit: Image courtesy of UT Southwestern Medical Center)

ScienceDaily (Oct. 20, 2008) — Adding corticosteroids to traditional antimicrobial therapy might help people with pneumonia recover more quickly than with antibiotics alone, UT Southwestern Medical Center scientists have found.

Unlike the anabolic steroids used to bulk up muscle, corticosteroids are often used to treat inflammation related to infectious diseases, such as bacterial meningitis. Used against other infectious diseases, however, steroid therapy has been shown to be ineffective or even harmful.

In a study available online and in a future issue of the Journal of Infectious Diseases, researchers at UT Southwestern show that mice infected with a type of severe bacterial pneumonia and subsequently treated with steroids and antibiotics recovered faster and had far less inflammation in their lungs than mice treated with antibiotics alone.

"Some people might think that if you give steroids, it would counteract the effect of the antibiotic," said Dr. Robert Hardy, associate professor of internal medicine and pediatrics and the study's senior author. "But it turns out you need the antibiotic to kill the bug and the steroid to make the inflammation in the lung from the infection get better. The steroids don't kill the bugs, but they do help restore health."

Pneumonia is a lung infection typically characterized by breathing difficulties and spread by coughing and sneezing. Symptoms include headache, fever, chills, coughs, chest pain, sore throat and nausea. Pneumonia caused by the Mycoplasma pneumoniae bacterium is generally a less severe form of the disease that can occur in any age group. It accounts for 20 percent to 30 percent of all community-acquired pneumonia cases.

In the current study, mice infected with the M pneumoniae bacterium were treated daily with a placebo, an antibiotic, a steroid, or a combination of the antibiotic and steroid in order to investigate the effect on M pneumoniae-induced airway inflammation. The animals were then evaluated after one, three and six days of therapy.

"It turns out that the group that got both the antibiotic and the steroids did the best," Dr. Hardy said. "The inflammation in their lungs got significantly better."

Although antimicrobials remain the primary therapy for M pneumoniae infection, there have been several reports in recent years about physicians adding steroids to the treatment regimen of patients with severe cases, Dr. Hardy said. The problem, he said, is that those were individual case reports.

"They never had a control group, so it was impossible to tell what impact the addition of steroids had on recovery," he said.

The new findings not only suggest that giving antibiotics with steroids can help individuals with pneumonia get better faster, but also suggest a potentially more effective therapy for someone in the midst of an asthma attack due to M pneumoniae infection. Up to 20 percent of asthma attacks in children and adults have been shown to be triggered by this bacterium.

Dr. Hardy said it's too early to recommend steroids as standard treatment for people with this type of bacterial pneumonia, but the work does support the need for a clinical trial.

"Or if there are very sick patients, this combination treatment doesn't seem to worsen the disease," he said. "The good thing about our results is the data alone support moving on to a clinical study."

Adapted from materials provided by UT Southwestern Medical Center.

http://www.sciencedaily.com/releases/2008/10/081014145904.htm

Alternative Theory Of Information Processing In The Cortex

ScienceDaily (Oct. 20, 2008) — Neurons in the sound-processing part of the brain's cortex are experts at timing. With remarkable precision, they fire electrochemical pulses or "spikes" in sync with the cues they receive from other neurons, even when these cues are separated by very small time intervals.

A team of neuroscientists at Cold Spring Harbor Laboratory (CSHL), studying this phenomenon in rats, has demonstrated that "spike timing" in cortical neurons can influence behavior even at minuscule time intervals, more precise than previously imagined. Experiments focusing on the auditory cortex revealed that animals in the midst of decision-making have the ability to distinguish incoming signals separated by as little as three milliseconds.

Probing the relation of neuronal firing rates and behavior

The finding, published ahead of print October 12 in the online edition of Nature Neuroscience, adds to the current understanding of how neuronal activity in the brain's cortex modulates behavior. According to the standard model of cortical activity, behavior is thought to be determined by the rate of spiking -- the number of spikes occurring within a given interval. The CSHL team, led by Professor Anthony Zador, Ph.D., wanted to determine whether spike timing had any impact on decision-making and measure the shortest decision-driving interval between spikes.

Zador's group designed an experiment in which rats were trained to behaviorally distinguish between two sounds. When placed in a cage with two water outlets, the rats were trained to turn either to the left or to the right waterspout depending on the sound. The sounds were then replaced by electrical impulses delivered directly to two spatially separated groups of neurons in the auditory cortex. The animals were then re-trained so that simultaneous stimulation of both groups of neurons spurred the animal toward the left waterspout, whereas sequential stimulation of the neuron bundles led the animal to the right waterspout. The rats consistently homed to the right waterspout until the timing between the two sequential stimuli narrowed to below 3 milliseconds. "This suggests that the cortex is capable of 'reading out' very precise nuances in spike timing to drive behavior," says Zador.

Deciphering the "Neural Code"

The group's discovery helps make the case for an alternate theory of how the brain processes information. Neuroscientists have made vast leaps in understanding how neurons communicate with each other in the brain. But they are still in the dark about what the neuron-to-neuron message actually consists of and how it's processed. Known as the "neural code," this blueprint for the brain's information-processing language has proved to be much more elusive than language that is encoded in our genome, which was deciphered decades ago.

The prevailing theory behind the neural code is based on the observation that neurons spike faster when they are transmitting information. This supports a "rate" code model, which stipulates that information is contained within the spiking rate of the neuron. But the CSHL team's new data suggest that the neural code might actually be a "timing" code, where information is encoded within the precise pattern of spiking — something that can be deduced by examining how the spikes are distributed over time.

Zador explains the difference between the two possibilities by likening the brain to an office and neurons to the people working in the office. "If lots of people are talking within each department in a company, you might get a good idea of what's going on in the company by just measuring how loudly people are talking within a given department, which is what the classical 'rate' model predicts," he says.

But as Zador also observes, conversation is not just about loudness; it's also about the identity of the speakers, their speech patterns, etc. "Our results demonstrate directly that there is more to this 'office' than just how loudly people are talking, and motivate us to try to figure out what that extra dimension is," he says. He and his CSHL team will continue to probe for the answers as their work on this and related mysteries about neural communication continues.

Journal reference:

1. Yang Yang, Michael R DeWeese, Gonzalo Otazu, Anthony M Zador. **Millisecond-scale differences in neural activity in auditory cortex can drive decisions**. *Nature Neuroscience*, October 12, 2008 [link]

Adapted from materials provided by Cold Spring Harbor Laboratory.

http://www.sciencedaily.com/releases/2008/10/081016162240.htm

American Kids Left Behind in Numbers Game

Social stigmas against math force youths to hide or neglect skills.

Back in 1992, the toymaker Mattel Inc. was compelled to apologize because its new doll, Teen Talk Barbie, uttered the memorably infamous phrase, "Math class is tough."

In announcing that the company would offer a swap of dolls to anyone who was offended by the suggestion that girls struggle with arithmetic, Mattel's president said: "In hindsight, the phrase 'math class is tough,' while correct for many students both male and female, should not have been included. We didn't fully consider the potentially negative implications of this phrase ..."

A decade and a half later, the United States, it seems, still can't find the right way to encourage its best and brightest young math students, especially girls. A new report from the Notices of the American Mathematical Society, which analyzed data on students with profound math aptitude, uncovered many girls with extremely high abilities in math; however, these students are rarely identified, and usually veer away from a career in mathematical sciences, because American culture looks down on math.

"The U.S. culture that is discouraging girls is also discouraging boys," said Janet Mertz, a University of Wisconsin-Madison professor of oncology and the senior author of the study, in a press release. "The situation is becoming urgent. The data show that a majority of the top young mathematicians in this country were not born here."

The new study analyzed decades of data from top-level mathematics competitions for the most elite math students, including the collegiate William Lowell Putnam Mathematics Competition and the pre-collegiate International and USA Mathematical Olympiads.

Crunching the numbers, Mertz and her colleagues found:

* Contrary to the Barbie-fed myth that females lack an inherent aptitude for high-level mathematics, many girls display exceptional talent in the subject.

* In some countries, where math skills are highly valued, girls and boys with exceptional aptitude are routinely identified and nurtured; in the U.S., such talent is usually ignored, and many American kids are actively discouraged from achievement in mathematics.

* American kids of immigrants from areas of the world that highly value math — notably Eastern Europe and Asia - are more likely to be identified as having excellent mathematical ability.

* In the United States, the pipeline for nurturing top math talent is badly broken beginning at the middle school level. In recent years, 80 percent of female and 60 percent of male faculty hired by the very top American research university mathematics departments were born outside the U.S.

And as the United States finds itself amid a worldwide economic crisis, Joseph A. Gallian, current president of the Mathematical Association of America, said the country's math problems extended far beyond the bounds of the classroom.

"Just as there is concern about the U.S. relying on foreign countries for our oil and manufactured goods, we should also be concerned about relying on others to fill our needs for mathematicians, engineers and scientists," said Gallian, a co-author of the report and professor of mathematics at the University of Minnesota Duluth.

The study found that in some environments, girls accounted for 11-24 percent of the children who had profound mathematical aptitude; in others, including the United States, girls were thirtyfold or more underrepresented.

In elementary school, girls do as well as or better than boys in math. But by middle school, thanks to peer and societal pressure, girls with a hankering for math begin to fall behind, the study found. Throughout middle and high school, in most American learning institutions, social stigmas form against math, and opportunities to challenge the most gifted students are few and far between. As a result, mathematically advanced girls, even more so than their male peers, often hide or neglect their math skills.

The report suggests that the situation threatens the economic well-being of the United States and recommends a number of steps, including implementing the findings of the National Mathematics Advisory Panel and fully funding the America COMPETES, "10,000 Teachers, 10 Million Minds" program and the Sowing the Seeds through Science and Engineering Research Acts, already passed by Congress.

http://www.miller-mccune.com/article/788

Maths and science 'end decline'

A £350m "rescue plan" to stop a decline in degree subjects including maths and science is succeeding, says the Higher Education Funding Council for England.

It forecasts a 7% increase for maths in 2009, which will mean about 7,000 students entering university maths departments, against 5,300 in 2005.

There are also expected increases of 3.5% for chemistry and 1.3% for physics in next year's university intake.

University Secretary John Denham says the changes are "encouraging".

However the increases have been against an overall rise in student numbers - and as a proportion of the intake, maths and science subjects have made only slight increases.

'Vulnerable' subject

From 2005-06, the funding council has been working to increase the numbers of students in "vulnerable" or strategically important subjects including science, technology, engineering, maths and modern languages.

A £29m scheme has seen more than 1,000 extra science and maths students entering university - but a £36m support for languages has seen French studies entrants rise only from 713 in 2005 to 780 in 2008.

There have been projects in school to promote interest in maths and science - which the funding council says are beginning to turn round a long-term decline.

"There is much more work to be done, but the future of these subjects looks much healthier than it did when our programme began three years ago," says Hefce's chief executive, David Eastwood.

Projections

The investment has included £15m in pilot projects to raise interest and improve accessibility of university courses and £100m to "sustain very high-cost and vulnerable science provision".

In 2005, figures from the university admissions service, Ucas, showed there were 5,263 people entering maths degree courses - which according to provisional figures has risen to 6,421 this autumn, with a further increase projected for 2009.

However as a proportion of students entering university there has been little change.

According to figures from Hefce, the proportion of students studying chemistry, physics and general engineering has risen by less than 1% between 2005 and 2008 - with maths rising by 1.42%.

In terms of the numbers being recruited - for 2007, the most recent year with complete figures - there were 5,195 beginning maths degrees, 3,907 chemistry and 3,228 physics.

The most popular subject areas for students beginning university this year have been law (17,000), design (16,000), psychology (15,000) and management (11,000).

By international standards, however, the UK has a relatively high proportion of students going into maths and science - above the average for both the European Union and the Organisation for Economic Co-operation and Development.

But the funding council says that it took the strategic decision to further strengthen the numbers in these areas as a way of competing in a global economy.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/uk_news/education/7679744.stm

Published: 2008/10/21 04:56:16 GMT

Hi-tech brings families together

Technology is helping families stay in touch like never before, says a report.

Instead of driving people apart, mobile phones and the net are helping them maintain social ties, says the Pew Internet report.

Families are also among the keenest users of technology, the survey of 2,252 Americans revealed.

It found that using the net was often a social activity within families, with 51% of parents saying they browsed the web with their children.

"Some analysts have worried that new technologies hurt family togetherness, but we see that technology allows for new kinds of connectedness built around cell phones and the internet," said Tracy Kennedy of the University of Toronto who helped to write the Networked Families report.

Family and friends

The research looked at the differences in technology use between families with children and single adults, couples without children and adults who share a home but are not related.

It found that traditional so-called "nuclear" families were more likely to have more hi-tech gadgetry in their home than almost any other group it measured.

Multiple mobile phones were found in 89% of nuclear families and 66% had a high-speed net connection. The US national average for broadband is 52%.

It also found that 58% of this type of family were likely to have more than two computers in the home.

Many people use their mobile phone to keep in touch and maintain social ties with parents, siblings and children. Seventy percent of couples who both own a mobile use it every day to chat or say hello. In addition, it found, 42% of parents contact their children via their mobile every day.

This led to 53% of those questioned saying that new technologies had increased the quality of their contact with distant family members, while 47% said it improved interaction with those they live with.

The growing use of cellphones, computers and the net meant that families no longer gathered round the TV for shared experiences but this did not mean, said the report, that these communal times had vanished.

Instead it found that 52% of net users who live with their spouse and have children go online in the company of someone else several times a week.

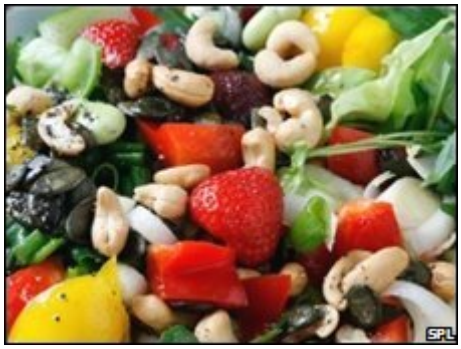
For many, greater use of the net came at the expense of TV watching, with 25% saying they now spent less time watching television. Only 58% of 18-29 year olds said they watched TV every day.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/technology/7679734.stm

Published: 2008/10/20 12:02:53 GMT

Western diet 'raises heart risk'

Swapping fried and salty foods for fruit and veg could cut the global incidence of heart attacks by a third, a study of eating habits suggests.



Researchers analysed the diet of 16,000 people in 52 countries and identified three global eating patterns, Circulation journal reports.

The typical Western diet, high in fat, salt and meat, accounted for about 30% of heart attack risk in any population.

A "prudent" diet high in fruit and veg lowered heart risk by a third.

> **30% of the risk of heart disease in a population could be related to poor diet**
> Lead author Romania Iqbal

An Oriental diet, high in tofu, soy and other sauces, made no difference to heart attack risk. The researchers created a dietary risk score questionnaire based on 19 food groups and then asked 5,561 heart attack patients and 10,646 people with known heart disease to fill out their survey.

People who ate a Western diet had a 35% greater risk of having a heart attack than those who ate little or no fried foods and meat.

The typical Western diet has been widely linked to heart disease. High salt in the diet can raise blood pressure and the wrong type of fat can clog blood vessels.

Investigating overall eating patterns is more true to life than looking at intake of individual foods or nutrients.

Global trend

The researchers said their work suggested that the same relationships between food and heart disease that are observed in Western countries exist in other regions of the world.

Lead author Romania Iqbal, of McMaster University in Canada, said: "30% of the risk of heart disease in a population could be related to poor diet."

The researchers said that while components of the Oriental diet might be bad for the heart - such as the salt in soy sauce - these elements were likely cancelled out by protective components.

Ellen Mason, a cardiac nurse for the British Heart Foundation, said: "This study shows that it doesn t matter whether you live in Bolton or Bombay, or whether you like to eat British, African Caribbean or Asian foods.

"The vital thing is to reduce your intake of salty, fried, fatty food to a minimum but increase the amount of fruit and vegetables you eat."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/7680283.stm

Published: 2008/10/21 00:16:34 GMT

Universities try new grading plan

Universities are to try out a more detailed way of recording student achievement - which aims to supplement the current grading system.

A total of 18 UK universities are to test the new Higher Education Achievement Report.

This will show more information about students' performance in individual modules and assessments.

The pilot scheme will run alongside the current system of classifying degrees as first, second and third class.

The pilot project follows the report by the Burgess Group, in which the vice-chancellor of Leicester University, Robert Burgess, looked for a replacement for the traditional grading system.

'Transparent'

There have been concerns that too many students were being awarded a 2:1 degree - and that employers did not have enough information from degree levels to distinguish between job applicants.

In 2004, Professor Burgess produced a report on behalf of Universities UK which said that the current grading system has "outlived its usefulness" - and which called for a more informative "progress file".

A follow-up report in 2007 concluded that despite the weaknesses of the current system nothing else had been found that was definitively better and suggested that the current grades could be supplemented by additional information about students' results and coursework.

This system of augmenting the degree grades with these "Hear" reports is now going to be tested from 2009.

The pilots will be in four subjects - English, biology, accounting and creative arts.

"We are delighted that so many institutions have agreed to trial the Hear with the involvement of students and employers. This will give us an opportunity to see if the proposals add value and are practical," said Professor Burgess.

Higher Education Minister, David Lammy, said: "Providing clear and transparent information is essential both for students and their future employers."

The reform of degree grades was proposed in 2004 against a backdrop of changes in higher education - with the government linking extra funding from fees to an expectation of widening participation and greater openness in admissions.

In 2004, a report was also publishing proposing that students could apply for university places after they had received their A-level grade. The government endorsed the findings - but a review of possible implementation is also timetabled for 2010-11.

The trial institutions for the new Hear report will be University of Leicester; Goldsmiths, University of London; University of St Andrews; University of Manchester; Newcastle University; University College London; University of Aberystwyth; University of Northumbria; University of Wales Institute, Cardiff; University of Derby; University of Northampton; University of Gloucestershire; University of Greenwich; Keele University; University of Ulster; University for the Creative Arts, Canterbury; York St John University; and Newman University College.

Are you a university student or lecturer? Do you think the new system will be fairer? Send us your comments using the form below.

Name
Your E-mail address
Town & Country
Phone number (optional):
Comments
Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/uk_news/education/7680852.stm

Published: 2008/10/20 23:30:19 GMT

http://news.bbc.co.uk/2/hi/uk_news/education/7680852.stm