Infoteca's E-Journal

An Electronic Compilation of Scientific and Cultural Information by Sistema de Infotecas Centrales, Universidad Autónoma de Coahuila

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Too much stuff, too much food, too much info: John Naish on how modern life baffles our Stone Age brains into thinking we can never have enough

Over the past decade, two facts have become increasingly obvious – that our ever-increasing consumption is wrecking the planet, and that continually chasing more stuff, more food and more entertainment no longer makes us any happier. Instead, levels of stress, obesity and dissatisfaction are spiralling.

So why is our culture still chasing, consuming, striving ever harder, even though we know in our sophisticated minds that it's an unrewarding route to eco-geddon? New scientific studies are helping to reveal why. It's our primitive brains. These marvellous machines got us down from the trees and around the world, through ice ages, famines, plagues and disasters, into our unprecedented era of abundance. But they never had to evolve an instinct that said, "enough".

Instead, our wiring constantly, subliminally urges us: "Want. More. Now." Western civilisation wisely reined in this urge for thousands of years with an array of cultural conventions, from Aristotle's Golden Mean (neither too much, nor too little) to the Edwardian table-saying: "I have reached an elegant sufficiency and anything additional would be superfluous."

Consumer culture ditched all that, though, constructing instead an ever more sophisticated system for pinging our primitive desire circuits into overdrive. It got us to the point where we created everything we need as a basis for contentment. Now it's rushing us past the tipping point, beyond which getting more makes life worse rather than better. And it's making our brains respond more weirdly than ever.

Our old wiring may condemn us to keep striving ever harder until finally we precipitate our dissatisfied demise. But, instead, we could learn to practise the comfortable art of "enough" in this overstuffed world. There is a broad armoury of strategies we can adopt to proof our brains against the pressure to pursue and consume too much, to work too hard and to feel constantly inadequate and underprivileged. The most fundamental of these is knowledge: forewarned is forearmed. So here are just a few of the myriad unexpected ways in which our culture pushes our wanting brains into overdrive.

Stuffed by celebs

Consumer society has invented a barrage of ways to stimulate our want-more brains' acquisitive instincts, but the latest and greatest of these innovations is celebrities.

The desire-driven wiring of our primitive brains evolved in the Pleistocene era, between 130,000 and 200,000 years ago. It was moulded by half-starved hunter-gatherers and farmers whose crops frequently failed. Those who kept going survived to give us their yearning genes. That wanting instinct gets fixated on material goods. We evolved to desire possessions as no other creature does. Neolithic cave sites may partly explain why. Many contain millions of hand-axes – far more than cave-dwellers ever needed. Anthropologists believe that the best axes were not just prized tools, but precursors of Ferraris and Jimmy Choos. Owning Stone Age bling displayed your high reproductive value.

Nowadays this status-chasing urge makes designer goods sorely alluring, even if they make no real difference to our luxury-glutted lives. Our hunter-gatherer brains seem wired to experience constant buyers' urges, too. Brain scans by Emory University in Atlanta show how the reward-chemical dopamine is released when we spot a product and ponder its purchase. But only the anticipation, the hunt, releases dopamine. After the deal is sealed, the high may evaporate in minutes, leaving what shop-owners call "buyer's remorse".

One of the most successful ways to dispel that remorse and stimulate more buying is celebrity endorsement. Manufacturers spend millions paying the likes of Elizabeth Hurley to squirt their fragrance and Daniel Craig to handle their gadgets. Neurologists at Erasmus University in Rotterdam report that our ability to weigh desirability and value is knocked awry if an item is endorsed by a well-known face. This lights up the brain's dorsal claudate nucleus, which is involved in trust and learning. Areas linked to longer-term memory storage also fire up.

Our minds overidentify with celebrities because we evolved in small tribes. If you knew someone, then they knew you. If you didn't attack each other, you were probably pals.

Our minds still work this way, giving us the idea that the celebs we keep seeing are our acquaintances. And we sorely want to be like them. Humans are born imitators: this talent enabled us to develop far quicker than our competitors could via biological evolution alone. One chimp can watch another poking a stick into an anthill and mimic the basic idea, but only humans can replicate a technique exactly. We must choose carefully whom we copy and have evolved to emulate the most successful people we see. Thus, many of us feel compelled to keep up materially with celebs, the mythical alphas in our global village.

We've also evolved to despise being out of the in-crowd. Brain scans show that social rejection activates brain areas that generate physical pain, probably because in prehistory tribal exclusion was tantamount to a death sentence. And scans by the National Institute of Mental Health show that when we feel socially inferior, two brain regions become more active: the insula and the ventral striatum. The insula is involved with the gut-sinking sensation you get when you feel *that* small. The ventral striatum is linked to motivation and reward. To stave off the pain of feeling second-rate, we feel compelled to barricade ourselves behind evermore social acquisitions. That kept our ancestors competitively stretching for the next rung of social evolution, but now it has locked us into a Pyrrhic battle because the neighbours can also just about afford the latest status symbols, too.

Infomania

Our brains have an instinctive way of handling information that worked well until very recently: if we are confused or worried by what we learn, we feel driven to learn more. Now, however, technology has brought an info-blizzard. We see, for example, more then 3,500 sales messages a day. More than six trillion business e-mails were sent last year. It's bewildering, so we feel driven to seek even more information in quest for the one golden fact that explains it all.

The roots of this lie deep. On the savannah where our ancestors evolved, you needed to make the best of all the information you had. Novelty – new faces, shapes and concepts – was rare and would spark a mental conflict between fear and curiosity. It would take strong inquisitiveness to stimulate an early human to explore matters such as: "What happens if I kick that lizard?" The people who explored often

won the best chances to feed and breed. Over time, a reward system evolved in primitive brains to encourage information gathering.

It is still busily at work. A University of Southern California study reports that when we grasp a new concept, the "click" of comprehension triggers a shot of heroin-like opioids to reward the brain. The researcher Irving Biederman says human brains have a cluster of opioid receptors in a brain region associated with acquiring new information: we evolved to get high whenever we learn something. "We are designed to be info-vores," he says. "When you are trying to understand a difficult theorem, it's not fun. But once you get it, you feel fabulous."

The reward system is overridden by more pressing needs for food or safety, but on today's comfy sofas we have no predators or famines, so infomania can run amok, creating a mass desire for scary news, banal texts and celeb gossip. We keep seeking new sources for our mini-kicks because the opioid reward diminishes each time a novel experience is repeated.

Biederman's scans of volunteers' brains show they get less stimulation each time they see the same picture. In reply, the media industry offers increasingly quickfire stimuli that squeeze our "duh, seen that" response ever harder, intensifying our novelty addiction and curtailing our attention spans. This causes confusion: a survey by the Henley Centre, the social forecasting company, says that we are a society of info-hoarders, the new-media equivalents of crazy types living in homes crammed with newspapers. More than 70 per cent of people ticked the survey box saying: "I can never have too much information." But more than half also said that they don't have time to use the information they already have. One way of trying to cope with this overload is to cram in more information-seeking. Most twentysomethings now watch TV while also being online.

On top of this, our 24-hour rolling-news culture keeps us constantly story-chasing. Our minds fill with exaggerated anxiety as they witness regular reruns of the day's most shocking images. How many times does one have to see the same bomb-blast to get the idea? The horror is replayed continually, but we learn nothing more. Instead we become convinced that life is dangerous and beyond control. So we feel compelled to watch more news.

This is exacerbated by our primitive brains' limited sense of geography: if we see footage of a far-off massacre, our minds think it must have happened close by, within range of a Neolithic human's wanderings. We feel compelled to learn everything about this "nearby" threat. This causes a stressy cycle of continual info-seeking. Some psychology studies suggest that we should limit our news-watching to 30 minutes a day – or risk anxiety-related depression.

Appetite for destruction

Having an overacquisitive, harried, multi-tasking mindset is one of the worst ways in which to approach one of the greatest challenges that unprecedented abundance presents us: food. A quarter of Western adults are obese and a third are overweight. The majority will, it is predicted, be overweight in the next 20 years.

Our appetite will always tell us that food is fearfully scarce. Historically, it has been right. As recently as 1321, one English person in five is thought to have died of famine. First World War British soldiers were on average only 5ft 5in tall. They had grown up seriously malnourished. With food, as with possessions and information, our brains have never before had the need for an "enough" button. Tests by Martin Yeomans, an appetite psychologist at Sussex University, show that we don't really know when to stop eating. He gave volunteers plates of pasta, but kept switching and replenishing their plates, so that they lost track of how much they were consuming. "One man happily polished off 2kg of pasta at one sitting and thought he'd had a normal portion," he says.

Our appetite levels are intensified by constant ads and marketing. Our brains fill with reward chemicals at the mere sight of it all. The pleasure response is stronger than the one we get from eating food itself, claims Dr Nora Volkow, the director of the US National Institute of Drug Abuse. This is why food

marketing is so dangerous, she says: "It stimulates an old mechanism by which nature ensures that we actually consume food when food is available. We never knew when food was going to be available next."

This instinct is worsened by haste. Twenty years ago we spent on average 33 minutes over our evening meals. Now it's 14½ minutes. Meals get bolted as we refuel mindlessly over desks, in front of the telly, reading or on the phone. A 2006 survey found that fewer than 20 per cent of us regularly give our plates our full attention.

But being preoccupied or stressed while eating makes us overconsume, reports the journal *Appetite*. Your mind fails to experience the full spectrum of pleasure that it can obtain from consuming food. The "I've eaten loads, thanks" message fails to get sent from brain to body, and snacky pangs soon return. Kathleen Melanson, a nutrition professor at Rhode Island University, found this when she asked 30 women students to make two visits to her lab. Each time they were given a large plate of food and told to eat as much as they wanted.

When they were told to eat quickly, they consumed 646 calories in nine minutes, but when they were encouraged to pause between bites and chew each mouthful 15 to 20 times, they ate only 579 calories in 29 minutes. They also said they enjoyed their food more, felt fuller at the end of the meal and still felt fuller an hour afterwards. "Satiety signals clearly need time to develop," Melanson says. Other research indicates that it takes 20 minutes for your brain to realise that your stomach is full, so taking time to chew undistractedly enables your mind to keep up with your golloping.

PROOFING YOUR BRAIN

Change your mindset to "postmore" by challenging our culture's ingrained assumption that "more" of everything is automatically better. We're beset by slogans such as "Smart girls get *More*" and Virgin's "Get more" ad campaign.

Grow your gratitude. Our poor, starved, frozen ancestors would cry tears of joy if they suddenly landed in our culture of abundance. Fostering our appreciation of this bounty can also block the consumerist "cool" pressure to deride so many of our fine, workable possessions as "so last year".

Be enough We're constantly told that we aren't rich enough, glam enough, cool enough, networked enough, etc. This has a powerful insidious effect on our primitive, socially competitive brain circuits. It's like a toxic substance that turns rational brains into needy toddler-like grizzlers.

http://women.timesonline.co.uk/tol/life_and_style/women/body_and_soul/article3171583.ece?Submitted=true

Dance embodies excellence in the arts

Judith Mackrell

January 11, 2008 1:15 PM

http://blogs.guardian.co.uk/theatre/2008/01/dance_embodies_excellence.html

Leading the way ... Akram Khan in Third Catalogue, Purcell Room, in 2005. Photograph: Tristram Kenton

As usual, straight theatre has dominated the headlines in the latest storm over arts funding - both the bitterly contested round of Arts Council England cuts and the newly published McMaster report on encouraging excellence in the arts.

In terms of the former, there is some reason for dance's voice being muted. Among the various arts clients threatened with closure, I have heard of only three victims: Union, Chisenhale and Robert Hylton's Urban Classicism. (Three obviously feels like three too many for those involved, but this round of cuts is gentler than many the profession has suffered in the past.) Dance should occupy a far more vocal position in the debate over the McMaster report, since much of what the report advocates is taken for granted within the UK's dance scene.

Internationalism is key to McMaster's vision for the future - and many of us would argue that the dance scene in Britain is already extraordinarily global. Dance languages travel fast and easily, and with choreographers such as Akram Khan leading the way, the cultural mix that makes up the British population is vividly reflected in its dance scene. Added to this, many of our companies have become a magnet for performers from around the world - the current memberships of the Royal Ballet, Rambert and Phoenix are brilliantly international, while the range of dance programming at our theatres (Sadler's Wells, the Barbican, the Dance Consortium network across the UK) is, in my experience, unmatched anywhere else.

Innovation is McMaster's other main concern. Again, this is something dance takes for granted, at least within the arena of modern choreography. It is a central dynamic of the form that each generation reinvents itself - and I would argue that, as a critic, I see a greater proportion of new work than many of my colleagues in the other arts.

Sustaining creativity takes money and support, and McMaster is right to pinpoint the need for more coherent provision of both. But again dance has taken some seminal initiatives with institutions like the

Wells developing its team of associate artists, and individuals like Siobhan Davies fighting for the need for research and development space.

Still, the profession has no room for complacency. There is even a potential danger in McMaster's challenge to make innovation the core of future arts funding. Experiment may be the lifeblood of dance but so too is tradition. It is easy to mock ballet companies for churning out Swan Lake and Sleeping Beauty every year, but the classics only exist if they are regularly performed. They cannot be studied in libraries, they can only be seen on stage and it would be dangerous if the buzzwords of innovation and relevancy (repeated more times than I could be bothered to count in McMaster's report) undermine the guardianship of the past. A great performance of Giselle, a revival of choreography by Martha Graham or Merce Cunningham, can be just as transforming to watch as any new work - and may be what feeds and inspires choreographers of the next generation. Huge chunks of dance history have already been lost. Efforts to preserve what we have shouldn't be undermined.

One final issue is McMaster's emphasis on the importance of education in art. The government is beginning to address this and has, over the last few months, shovelled millions of pounds into the revival of music teaching in schools. Fabulous, yes, but no money has yet been earmarked for dance. If we are looking beyond diversity and internationalism towards homegrown excellence, then we need to be seriously developing the art form at a much earlier level.

http://blogs.guardian.co.uk/theatre/2008/01/dance_embodies_excellence.html

Greenhouse Ocean May Downsize Fish, Risking One Of World's Most Productive Fisheries

Fresh pollock fish. The changing ecosystem may support less pollock in the Bering Sea. Pollock is a critically important commercial fish. (Credit: iStockphoto/Andreas Glossner)

ScienceDaily (Jan. 14, 2008) — The last fish you ate probably came from the Bering Sea.

But during this century, the sea's rich food web--stretching from Alaska to Russia--could fray as algae adapt to greenhouse conditions.

"All the fish that ends up in McDonald's, fish sandwiches--that's all Bering Sea fish," said USC marine ecologist Dave Hutchins, whose former student at the University of Delaware, Clinton Hare, led research published Dec. 20 in Marine Ecology Progress Series.

At present, the Bering Sea provides roughly half the fish caught in U.S. waters each year and nearly a third caught worldwide.

"The experiments we did up there definitely suggest that the changing ecosystem may support less of what we're harvesting--things like pollock and hake," Hutchins said.

While the study must be interpreted cautiously, its implications are harrowing, Hutchins said, especially since the Bering Sea is already warming.

"It's kind of a canary in a coal mine because it appears to be showing climate change effects before the rest of the ocean," he noted.

"It's warmer, marine mammals and birds are having massive die-offs, there are invasive species--in general, it's changing to a more temperate ecosystem that's not going to be as productive."

Carbon dioxide's direct effects on the ocean are often overlooked by the public.

"It's all a good start that people get worried about melting ice and rising sea levels," he said. "But we're now driving a comprehensive change in the way Earth's ecosystem works--and some of these changes don't bode well for its future."

The study examined how climate change affects algal communities of phytoplankton, the heart of marine food webs. Phytoplankton use sunlight to convert carbon dioxide into carbon-based food. As small fish eat the plankton and bigger fish eat the smaller fish, an entire ecosystem develops.

The Bering Sea is highly productive thanks mainly to diatoms, a large type of phytoplankton. "Because they're large, diatoms are eaten by large zooplankton, which are then eaten by large fish," Hutchins explained. The scientists found that greenhouse conditions favored smaller types of phytoplankton over diatoms. Such a shift would ripple up the food chain: as diatoms become scarce, animals that eat diatoms would become scarce, and so forth.

"The food chain seems to be changing in a way that is not supporting these top predators, of which, of course, we're the biggest," Hutchins said. A shift away from diatoms towards smaller phytoplankton could also undermine a key climate regulator called the "biological pump."

When diatoms die, their heavier carbon-based remains sink to the seafloor. This creates a "pump" whereby diatoms transport carbon from the atmosphere into deep-sea storage, where it remains for at least 1,000 years. "While smaller species often fix more carbon, they end up re-releasing CO_2 in the surface ocean rather than storing it for long periods as the diatom-based community can do," Hutchins explained. This scenario could make the ocean less able to soak up atmospheric carbon dioxide.

"Right now, the ocean biology is sort of on our side," Hutchins said. "About 50 percent of fossil fuel emissions since the industrial revolution is in the ocean, so if we didn't have the ocean, atmospheric CO_2 would be roughly twice what it is now."

Hutchins and colleagues are doing related experiments in the north Atlantic Ocean and the Ross Sea, near Antarctica. The basic dynamics of a greenhouse ocean are not well understood, he noted.

"We're trying to make a contribution by doing predictive experimental research that will help us understand where we're headed," he said. "It's unprecedented the rate at which things are shifting around."

The researchers collected the algae samples from the Bering Sea's central basin and the southeastern continental shelf. They incubated the phytoplankton onboard, simulating sea surface temperatures and carbon dioxide concentrations predicted for 2100.

Each of these variables was tested together and independently. Ratios of diatom to nanophytoplankton in manipulated samples were then compared with those in plankton grown under present conditions.

The scientists found that photosynthesis in greenhouse samples sped up two to three times current rates. However, community composition shifted from diatoms to the smaller nanophytoplankton.

Temperature was the key driver of the shift with secondary impacts from the increased carbon dioxide concentrations, according to the study.

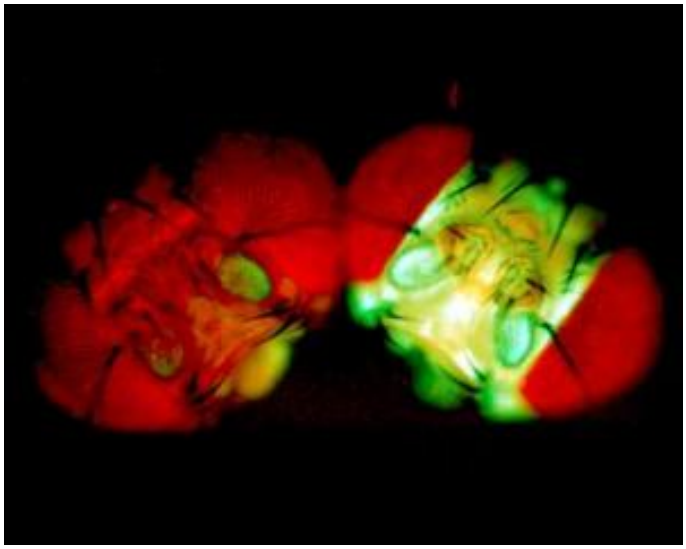
Hutchins and Hare's collaborators were Karine Leblanc of the Centre National de la Recherche Scientifique, in France; Giacomo DiTullio, Peter Lee and Sarah Riseman of the College of Charleston; Raphael Kudela of the University of California at Santa Cruz; and Yaohong Zhang of the University of Delaware.

The National Science Foundation supported the research.

Adapted from materials provided by University of Southern California.

http://www.sciencedaily.com/releases/2008/01/080111151504.htm

Fruit Flies All Aglow Light The Way To Cancer Prevention



A magnified, straight-on view of two fruit flies under ultraviolet light. The fly on the right has been exposed to oltipraz, a compound that activates a major cancer-prevention pathway, and thus glows green brightly; the fly on the left has not. The technology allows researchers to quickly determine whether the pathway, a major source of anti-oxidant activity in people, is on or off. (Credit: Photo courtesy of Dirk Bohmann/University of Rochester Medical Center)

ScienceDaily (Jan. 15, 2008) — A green glow from a fruit fly is giving researchers the green light when they are on the right path in their quest to develop compounds that help prevent cancer.

The glow, the result of some tinkering in Drosophila, the workhorse of the genetics world, lets researchers know when powerful cancer-prevention signals similar to those spurred by protective chemicals in broccoli, cabbage, and other foods, have been turned on in the organism.

The chemical signaling system is one of the major ways that the body defends itself against toxic assaults and threats like cigarette smoke, diesel exhaust, and dangerous microbes. A gene known as KEAP1 senses danger and then unleashes NRF2, which triggers rampant anti-oxidant activity in a cell.

Now scientists from the University of Rochester Medical Center have discovered that the pathway, long recognized in people and other animals, is active in fruit flies, too, opening the door to faster, less expensive ways to find compounds that spur our natural anti-oxidant activity. The work, funded by the National Cancer Institute, is reported in the Jan. 15 issue of Developmental Cell.

"This is one of the main mechanisms the body uses to fight off the things that give you cancer," said Dirk Bohmann, Ph.D., professor in the Department of Biomedical Genetics and a geneticist who studies fruit flies in an effort ultimately aimed at improving human health.

"This puts cells into an anti-oxidant defense mode. Drug development and testing is very, very expensive and time-consuming. This work should speed the development of new drugs aimed at preventing cancer," added Bohmann.

Bohmann did the work along with former postdoctoral Gerasimos P. Sykiotis, M.D., Ph.D., who teamed up with Bohmann to develop novel approaches for the study of the NRF2 pathway after earning his medical and doctoral degrees from the University of Patras in Greece. Sykiotis is now with

the Model Organisms Unit of the Novartis Institutes for Biomedical Research in Cambridge, Mass., where he is applying the genetic tools generated in the study to characterize the role of NRF2 signaling in Drosophila models of human diseases.

Scientists have known that the pathway exists in people, rodents, and zebrafish, and so Bohmann and Sykiotis went hunting for it in the fruit fly genome. They found that one form of a gene called CNC, which is widely known to be involved in determining the development of a fruit fly's head, serves like NRF2, turning on cellular defenses on a broad scale.

The defenses include activation of molecules known as thioredoxins and glutathione S-transferases, which are anti-oxidants that help a cell get rid of toxins and damaged molecules in its environment. Unlike popular anti-oxidants in certain foods and vitamins, whose effects in the body are transient, Bohmann points out that a fundamental genetic change like a boost in NRF2 activity throughout an organism would supply an ongoing amplified anti-oxidant response.

While the main application of the work is in boosting the body's ability to resist cancer, the research could also make a difference for patients who have cancer that is resistant to current drugs. In 2006, a team from Johns Hopkins showed how this same signaling pathway allows some cancer cells to fight off drugs intended to kill them. Gaining a foothold on the system in fruit flies gives researchers an added tool as they search for ways to thwart these rogue cancer cells.

In their experiments, Bohmann and Sykiotis modified fruit flies so they would glow green when exposed to ultraviolet light when the signaling pathway is functioning. Sure enough, flies with more active CNC glow more brightly than regular flies, giving the team an easy, visual way to see whether the pathway is activated.

The team demonstrated the technology using a compound called oltipraz, which targets the pathway and has been tested in people as a cancer-prevention agent. The flies that ate food with the compound glowed more strongly, demonstrating that the NRF2 pathway was more active in these flies.

"Turning on our natural anti-oxidants is big business for many companies trying to develop compounds to protect us from cancer and to slow the aging process," said Bohmann. "The same genetic principles govern many organisms, from flies to rodents to people, and we're hopeful that our tool in fruit flies will speed this work for the benefit of patients."

When Bohmann and Sykiotis boosted the activity of the pathway, fruit flies were three times more likely to survive an exposure to a toxin than regular flies. And flies with a more active signaling system can live 10 percent longer than the other flies.

It's the first time that the system, long known to be an important anti-oxidant and cancer prevention pathway, has also been shown to play a role in giving an organism a longer lifespan. The link gives new insight into the well-established connection between aging and cancer risk.

Two of Bohmann's colleagues at the University of Rochester Medical Center are also studying the NRF2 pathway. Steve Georas, M.D., professor of medicine and chief of the Division of Pulmonary and Critical Care, is looking at the role of NRF2 in people with asthma. And Irfan Rahman, Ph.D., associate professor of Environmental Medicine, has shown how NRF2 protects the lungs of smokers against the assault of cigarette smoke and other pollutants. He has shown that organisms in which NRF2 is weakened or absent have weak lungs and are much more prone to conditions like emphysema.

Adapted from materials provided by University of Rochester Medical Center.

Violent Lives Of Galaxies: Dark Matter Found Tugging At Galaxies In Supercluster

These images reveal the distribution of dark matter in the supercluster Abell 901/902, composed of hundreds of galaxies. The image in the center shows the entire supercluster. Astronomers assembled this photo by combining a visible-light image of the supercluster taken with the MPG/ESO 2.2-meter telescope in La Silla, Chile, with a dark matter map derived from observations with the NASA/ESA Hubble Space Telescope. The magenta-tinted clumps represent a map of the dark matter in the cluster. Dark matter is an invisible form of matter that accounts for most of the Universe's mass. The image shows that the supercluster galaxies lie within the clumps of dark matter. (Credit: Credit for the Hubble images: NASA, ESA, C. Heymans (University of British Columbia, Vancouver), M. Gray (University of Nottingham, U.K.), M. Barden (Innsbruck), and the STAGES collaboration Credit for the ground-based image: ESO, C. Wolf (Oxford University, U.K.), K. Meisenheimer (Max-Planck Institute for Astronomy, Heidelberg), and the COMBO-17 collaboration)

ScienceDaily (Jan. 14, 2008) — Astronomers are using the NASA/ESA Hubble Space Telescope to dissect one of the largest structures in the Universe as part of a quest to understand the violent lives of galaxies. Hubble is providing indirect evidence of unseen dark matter tugging on galaxies in the crowded, rough-and-tumble environment of a massive supercluster of hundreds of galaxies. Dark matter is an invisible form of matter that accounts for most of the Universe's mass. Hubble's Advanced Camera for Surveys has mapped the invisible dark matter scaffolding of the supercluster Abell 901/902, as well as the detailed structure of individual galaxies embedded in it.

The images are part of the Space Telescope Abell 901/902 Galaxy Evolution Survey (STAGES), which covers one of the largest patches of sky ever observed by the Hubble Space Telescope. The area surveyed is so wide that it took 80 Hubble images to cover the entire STAGES field. The new work is led by Meghan Gray of the University of Nottingham in the United Kingdom and Catherine Heymans of the University of British Columbia in Vancouver, along with an international team of scientists. The Hubble study pinpointed four main areas in the supercluster where dark matter has pooled into dense clumps, totalling 100 trillion times the Sun's mass. These areas match the location of hundreds of old galaxies that have experienced a violent history in their passage from the outskirts of the supercluster into these dense regions. These galaxies make up four separate galaxy clusters. "For the first time we are clearly detecting irregular clumps of dark matter in a supercluster," says Heymans, a postdoctoral fellow in the Dept. of Astronomy and Physics.

"Previous studies were only able to detect fuzzy, circular clumps, but we're able to resolve detailed shapes that match the distribution of galaxies."

Heymans said. "We can even see an extension of the dark matter toward a very hot group of galaxies that are emitting X-rays as they fall into the densest cluster core."

The dark matter map was constructed by measuring the distorted shapes of over 60,000 distant galaxies. To reach Earth, the galaxies' light travelled through the dark matter that surrounds the supercluster galaxies and was bent by the massive gravitational field. Heymans used the observed, subtle distortion of the galaxies' shapes to reconstruct the dark matter distribution in the supercluster using a method called weak gravitational lensing. The dark matter map is 2.5 times sharper than a previous ground-based survey of the supercluster. "The new map of the underlying dark matter in the supercluster is one key piece of this puzzle," Gray explained. "At the same time we're looking in detail at the galaxies themselves." The survey's broader goal is to understand how galaxies are influenced by the environment in which they live.

On Earth, the pace of quiet country life is vastly different from the hustle of the big city. In the same way, galaxies living lonely isolated lives look very different from those found in the most crowded regions of the universe, like a supercluster. "We've known for a long time that galaxies in crowded environments tend to be older, redder, and rounder than those in the field," Gray said. "Galaxies are continually drawn into larger and larger groups and clusters by the inevitable force of gravity as the universe evolves." In such busy environments galaxies are subject to a life of violence: high-speed collisions with other galaxies; the stripping away of gas, the fuel supply they use to form new stars; and distortion due to the strong gravitational pull of the underlying invisible dark matter. "Any or all of these effects may play a role in the transformation of galaxies, which is what we're trying to determine," Gray said.

The STAGES survey's simultaneous focus on both the big picture and the details can be likened to studying a big city. "It's as if we're trying to learn everything we can about New York City and New Yorkers," Gray explained. "We're examining large-scale features, like mapping the roads, counting skyscrapers, monitoring traffic. At the same time we're also studying the residents to figure out how the lifestyles of people living downtown differ from those out in the suburbs. But in our case the city is a supercluster, the roads are dark matter, and the people are galaxies." Further results by other team members support this view. "In the STAGES supercluster we clearly see that transformations are happening in the outskirts of the supercluster, where galaxies are still moving relatively slowly and first feel the influence of the cluster environment," said Christian Wolf, an Advanced Research Fellow at the University of Oxford in the U.K.

Assistant professor Shardha Jogee and graduate student Amanda Heiderman, both of the University of Texas in Austin, concur. "We see more collisions between galaxies in the regions toward which the galaxies are flowing than in the centres of the clusters," Jogee said. "By the time they reach the centre, they are moving too fast to collide and merge, but in the outskirts their pace is more leisurely, and they still have time to interact." The STAGES team also finds that the outer parts of the clusters are where star formation in the galaxies is slowly switching off and where the supermassive black holes at the hearts of the galaxies are most active.

Added Heiderman: "The galaxies at the centres of the clusters may have been there for a long time and have probably finished their transformation. They are now old, round, red, and dead." The team plans more studies to understand how the supercluster environment is responsible for producing these changes. Abell 901/902 resides 2.6 billion light-years from Earth and measures more than 16 million light-years across.

Gray and Heymans presented their findings on 10 January 2008 at the 211th meeting of the American Astronomical Society in Austin, Texas. A science paper on their results has been accepted by the Monthly Notices of the Royal Astronomical Society.

Adapted from materials provided by ESA/Hubble Information Centre.

http://www.sciencedaily.com/releases/2008/01/080110102323.htm

Earthquakes Under Pacific Floor Reveal Unexpected Circulatory System

Hydrothermal vents, or "black smokers," at the East Pacific Rise study area spew out hot water and a stew of chemicals. (Credit: Courtesy Woods Hole Oceanographic Institution)

ScienceDaily (Jan. 15, 2008) — Zigzagging some 60,000 kilometers across ocean floors, earth's system of mid-ocean ridges plays a pivotal role in many workings of the planet, from its plate-tectonic movements to heat flow from the interior, and the chemistry of rock, water and air. It was not until the late 1970s that scientists discovered the existence of vast plumbing systems under the ridges, which pull in cold water, superheat it, then spit it back out from seafloor vents -- a process that brings up not only hot water, but dissolved substances taken from rocks below. Unique life forms feed off the vents' stew, and valuable minerals including gold may pile up. Now, a team of seismologists working under 2,500 meters of water on the East Pacific Rise, some 565 miles southwest of Acapulco, Mexico, has created the first images of one of these systems--and it does not look the way most scientists had assumed.

The hypothetical image of a hydrothermal-vent system shows water forced down by overlying pressure through large faults along ridge flanks. The water is heated by shallow volcanism, then rises toward the ridges' middles, where vents (often called "black smokers," for the cloud of chemicals they exude) tend to cluster. The new images, from a 4-kilometer-square area show a very different arrangement.

The water appears to descend instead through a sort of buried 200-meter-wide chimney atop the ridge, run below the ridge along its axis through a tunnel-like zone just above a magma chamber, and then bubble back up through a series of vents further along the ridge. "If you google on images of hydrothermal vents, you come up with cartoons that don't at all match what we see," said lead author Maya Tolstoy, a marine seismologist at Lamont-Doherty Earth Observatory, part of Columbia University's Earth Institute.

The images were created using seismometers planted around the ridge to record tiny, shallow earthquakes--in this study, 7,000 of them, over 7 months in 2003 and 2004. Using new techniques developed by Lamont seismologist Felix Waldhauser, the quakes were located with great precision. They cluster neatly, outlining the cold water's apparent entrance. It dives straight down through the ridge about 700 meters, then fans out into a horizontal band about 200 meters wide before bottoming out at about 1.5 kilometers, just above the magma. Heated water rises back up through a dozen vents about 2 kilometers north along the ridge. The researchers interpret the quakes as the result of cold water passing through hot rocks and picking up their heat--a process that shrinks the rocks, and cracks them, creating the small quakes.

The downflow zone is thought to have been formed initially by a kink in the ridge, which stresses the rock enough to crack it mechanically. Seawater, forced down into the resulting space, eventually gets heated by the magma, then rises back to the seafloor--much the same process seen in a pot of boiling water. Tolstoy and her coauthors believe the water travels not through large faults--the model previously favored by some scientists--but through systems of tiny cracks. Furthermore, their calculations suggest that the water moves a lot faster than previously thought--perhaps a billion gallons per year through this particular system. Their chart of the water's route is reinforced by biologists' observations from submersible dives that the area around the downflow chimney is more or less lifeless, while the surging vents are a riot of bacterial mats, mussels, tubeworms, and other weird creatures that thrive off the heat and chemicals.

"It's an exciting and substantial contribution. It begins to look at some really big questions," said Dan Fornari, a marine geologist at Woods Hole Oceanographic Institution who was not involved in the study. Among other things, it is a mystery where vent organisms came from--some evolutionary biologists believe they originated life on earth--and how or whether they now make their way from one isolated vent system to another. The findings could add to an understanding of seafloor currents along which they may move, and of the nutrient flows that feed them. The work also has large-scale implications for how heat and chemicals are cycled to the seafloor and overlying waters, said Tolstoy. On a practical level, many large ore bodies now on land are thought to have been formed by such systems.

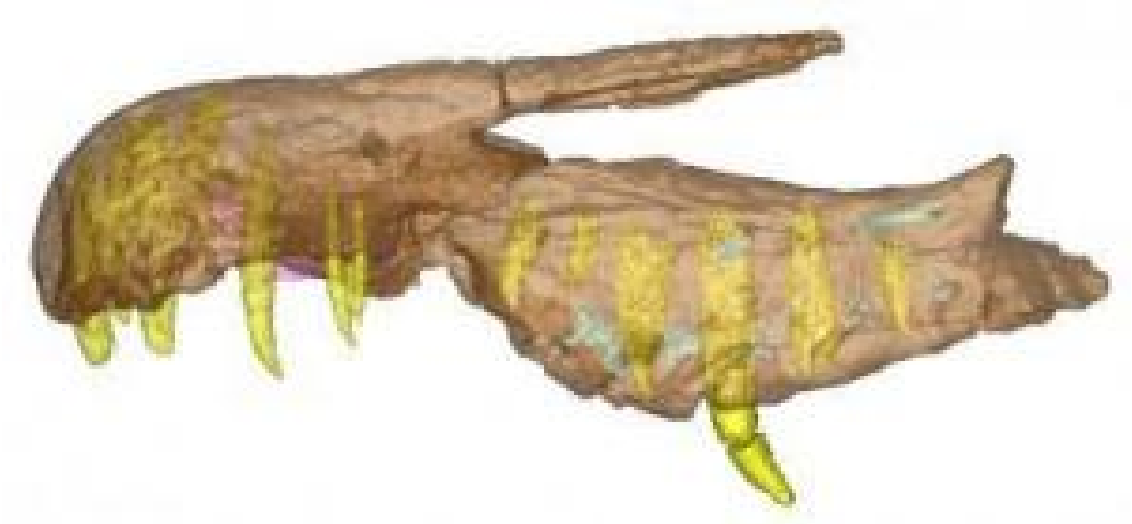
The work is part of a larger long-term interdisciplinary look at the East Pacific Rise, funded by the U.S. National Science Foundation. Scientists from Lamont and other institutions are still retrieving and analyzing data from earlier cruises. In 2006, a volcanic eruption buried some of their instruments; most of the instruments were lost, but those that survived provided new information about how the eruptions work. This summer, researchers hope to return aboard the new Lamont-operated vessel Marcus G. Langseth to generate unprecedented 3D images of the ridge's interior.

The study appears in detail in the Jan. 10 issue of the journal Nature.

Adapted from materials provided by The Earth Institute at Columbia University.

http://www.sciencedaily.com/releases/2008/01/080109173830.htm

Unusual Fish-eating Dinosaur Had Crocodile-like Skull



This image shows the results of the CT scan reconstruction. The Baryonyx snout bone is transparent brown. This shows us that the teeth (yellow) had extremely deep roots and that Baryonyx had independently evolved a bony palate (the pink structure), also seen in crocodilians -- another feature that makes this dinosaur even more 'crocodile-like'. (Credit: Emily Rayfield)

ScienceDaily (Jan. 14, 2008) — An unusual dinosaur has been shown to have a skull that functioned like a fish-eating crocodile, despite looking like a dinosaur. It also possessed two huge hand claws, perhaps used as grappling hooks to lift fish from the water.

Dr Emily Rayfield at the University of Bristol, UK, used computer modelling techniques -- more commonly used to discover how a car bonnet buckles during a crash -- to show that while Baryonyx was eating, its skull bent and stretched in the same way as the skull of the Indian fish-eating gharial -- a crocodile with long, narrow jaws.

Dr Rayfield said: "On excavation, partially digested fish scales and teeth, and a dinosaur bone were found in the stomach region of the animal, demonstrating that at least some of the time this dinosaur ate fish. Moreover, it had a very unusual skull that looked part-dinosaur and part-crocodile, so we wanted to establish which it was more similar to, structurally and functionally -- a dinosaur or a crocodile.

"We used an engineering technique called finite element analysis that reconstructs stress and strain in a structure when loaded. The Baryonyx skull bones were CT-scanned by a colleague at Ohio University, USA, and digitally reconstructed so we could view the internal anatomy of the skull. We then analysed digital models of the snouts of a Baryonyx, a theropod dinosaur, an alligator, and a fish-eating gharial, to see how each snout stressed during feeding. We then compared them to each other."

The results showed that the eating behaviour of Baryonyx was markedly different from that of a typical meat-eating theropod dinosaur or an alligator, and most similar to the fish-eating gharial. Since the bulk of the gharial diet consists of fish, Rayfield's study suggests that this was also the case for Baryonyx back in the Cretaceous.

Dr Angela Milner from the Natural History Museum, who first described the dinosaur and is co-author on the paper, said: "I thought originally it might be a fish-eater and Emily's analysis, which was done at the Natural History Museum, has demonstrated that to be the case.

"The CT-data revealed that although Baryonyx and the gharial have independently evolved to feed in a similar manner, through quirks of their evolutionary history their skulls are shaped in a slightly

different way in order to achieve the same function. This shows us that in some cases there is more than one evolutionary solution to the same problem."

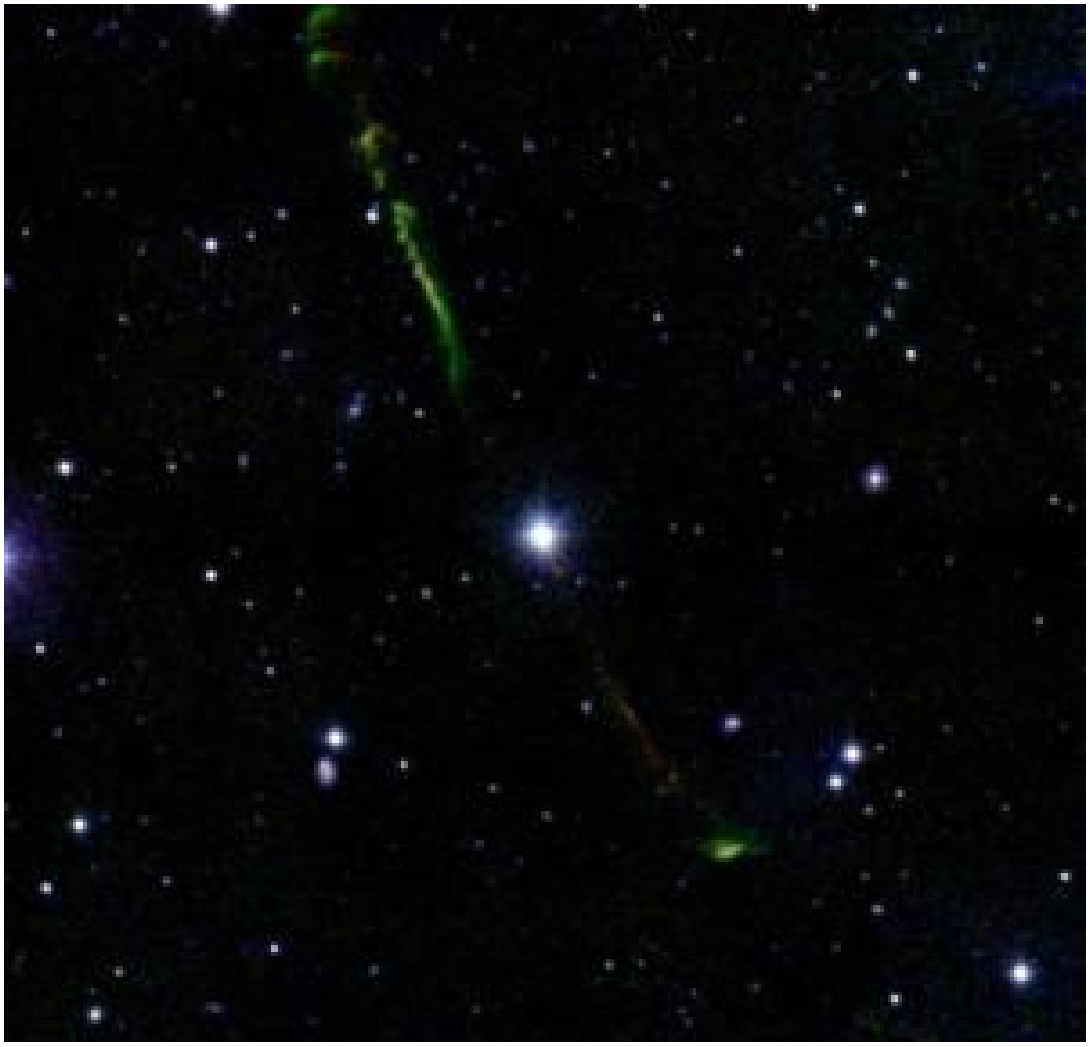
The unusual skull of Baryonyx is very elongate, with a curved or sinuous jaw margin as seen in large crocodiles and alligators. It also had stout conical teeth, rather than the blade-like serrated ones in meat-eating dinosaurs, and a striking bulbous jaw tip (or 'nose') that bore a rosette of teeth, more commonly seen today in slender-jawed fish eating crocodilians such as the Indian fish-eating gharial.

The dinosaur in question, Baryonyx walkeri, was discovered near Dorking in Surrey, UK in 1983 by an amateur collector, William Walker, and named after him in 1986 by Alan Charig and Angela Milner. It is an early Cretaceous dinosaur, around 125 million years old, and belongs to a family called spinosaurs.

Adapted from materials provided by University of Bristol.

http://www.sciencedaily.com/releases/2008/01/080113212741.htm

Two Unusual Older Stars Giving Birth To Second Wave Of Planets



The star BP Piscium (center), in the constellation Pisces. The green and red streaks are jets of gas shot from the star. The image was obtained using the 3-meter telescope at the University of California's Lick Observatory. (Credit: Image courtesy of University of California - Los Angeles)

ScienceDaily (Jan. 15, 2008) — Hundreds of millions -- or even billions -- of years after planets would have initially formed around two unusual stars, a second wave of planetesimal and planet formation appears to be taking place, UCLA astronomers and colleagues believe.

"This is a new class of stars, ones that display conditions now ripe for formation of a second generation of planets, long, long after the stars themselves formed," said UCLA astronomy graduate student Carl Melis, who reported the findings today at the American Astronomical Society meeting in Austin, Texas.

"If we took a rocket to one of these stars and discovered there were two totally distinct ages for their planets and more minor bodies like asteroids, that would blow scientists' minds away," said Benjamin Zuckerman, UCLA professor of physics and astronomy and co-author of the research, which has not yet been published. "We're seeing stars with characteristics that have never been seen before."

The stars, which Melis says possess "amazing" properties for their age, are known as BP Piscium, in the constellation Pisces, and TYCHO 4144 329 2, in the constellation Ursa Major.

These two stars have many characteristics of very young stars, Melis said, including rapid accretion of gas, extended orbiting disks of dust and gas, a large infrared excess emission and, in the case of BP Piscium, jets of gas that are being shot into space. Planetesimals, like comets and asteroids, along with planets, form from the gas and dust particles that orbit young stars; planetesimals are small masses of rock or ice that merge to form larger bodies.

"With all these characteristics that match so closely with young stars, we would expect that our two stars would also be young," Melis said. "As we gathered more data, however, things just did not add up." For example, because stars burn lithium as they get older, young stars should have large quantities of lithium. The astronomers found, however, that the spectroscopic signature of lithium in BP Piscium is seven times weaker than expected for a young star of its mass.

"There is no known way to account for this small amount of lithium if BP Piscium is a young star," Melis said. "Rather, lithium has been heavily processed, as appropriate for old stars. Other spectral measurements also indicate it is a much older star."

As seen from Earth, some 75 percent of BP Piscium's radiant energy is being converted by the dust particles into infrared light, and about 12 percent of TYCHO 4144 329 2's. These are unusually high amounts, which Melis described as "spectacular" in comparison to other stars that are known to be not-young.

TYCHO 4144 329 2 orbits a companion star that has a mass similar to that of our sun; a second generation of planets is not forming around this companion, which appears to be an ordinary old star in all respects. By studying this companion star, the astronomers have deduced that TYCHO 4144 329 2 is just 200 light-years from Earth -- very close by astronomical standards. They do not know precise age of TYCHO 4144 329 2, or BP Piscium's age or distance from Earth.

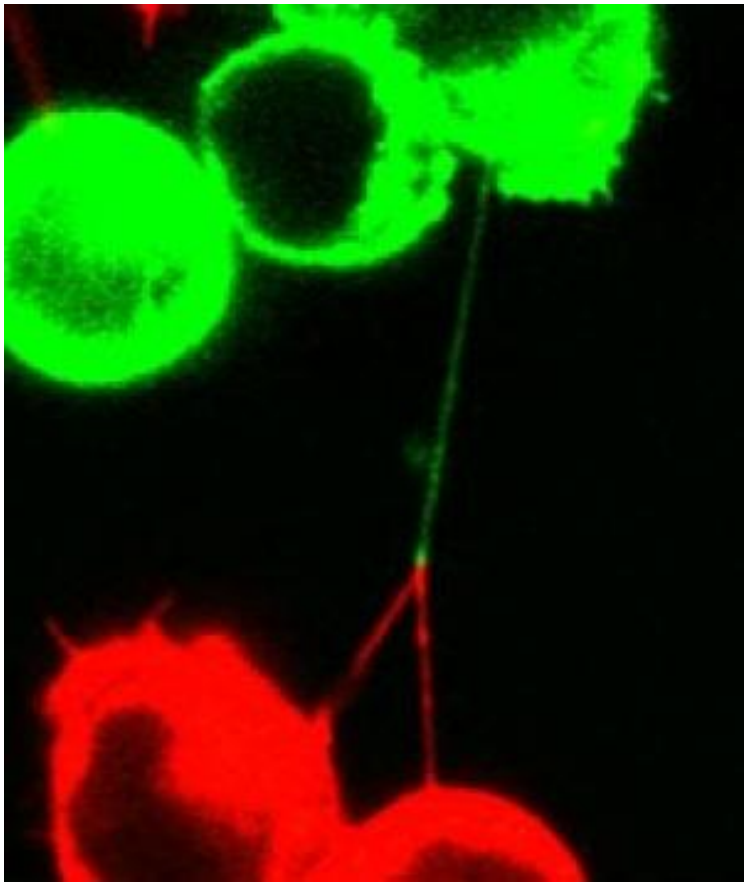
The astronomers are continuing to study these stars with a variety of ground-based telescopes and with space-based observatories, including NASA's Hubble Space Telescope and Chandra X-ray Observatory, and they are searching for additional similar stars.

In addition to Melis and Zuckerman, co-authors include Inseok Song of NASA's Spitzer Science Center at the California Institute of Technology; David Meier, a Jansky fellow at the National Radio Astronomy Observatory; Marshall Perrin, a UCLA postdoctoral scholar in astronomy; Bruce Macintosh of UC Berkeley's Department of Astronomy; Christian Marois of Lawrence Livermore National Laboratory's Institute of Geophysics and Planetary Physics; Alycia Weinberger of the Carnegie Institution at Washington's Department of Terrestrial Magnetism; Joseph Rhee, a UCLA postdoctoral scholar in astronomy; James Graham, a UC Berkeley professor of astronomy; Joel Kastner of the Rochester Institute of Technology; Patrick Palmer of the University of Chicago's Department of Astronomy and Astrophysics; T. Forveille of France's Laboratoire d'Astrophysique de Grenoble; Eric Becklin, a UCLA professor of physics and astronomy; D.J. Wilner of the Harvard-Smithsonian Center for Astrophysics; T.S. Barman of the Lowell Observatory; Geoff Marcy, a UC Berkeley professor of astronomy; M.S. Bessell of the Australian National University's Research School of Astronomy and Astrophysics; and Stanimir Metchev, a UCLA postdoctoral scholar in astronomy.

Adapted from materials provided by University of California - Los Angeles.

http://www.sciencedaily.com/releases/2008/01/080109173738.htm

T-cell 'Nanotubes' May Explain How HIV Virus Conquers Human Immune System



A membrane nanotube links three T-cells that have previously bumped into one another. (Credit: Image courtesy of Imperial College London)

ScienceDaily (Jan. 15, 2008) — String-like connections found between T-cells could be important to how HIV spreads between cells in the human immune system, according to new research. The newly-discovered strands, named 'membrane nanotubes' by scientists, could help to explain how the HIV virus infects human immune cells so quickly and effectively.

The new laboratory-based cellular study shows that when human T-cells bump into each other and then move apart again, a long string of membrane is sometimes formed, creating a connection between the two cells.

Scientists found that these membrane nanotubes can stretch out between the two cells as they move apart, sometimes several cell lengths away from each other. In lab tests mimicking the environment of the human body in 3D, the research team also found that the strings are flexible and can bend to keep cells connected.

After discovering the T-cell nanotubes, the researchers infected some of the T-cells with HIV modified to include a fluorescent protein. They observed that HIV proteins travelled down the nanotubes from infected cells to non-infected cells.

The scientists suggest that if this mechanism was proven to occur in the human body, as well as in the lab, it may help to explain why extra-cellular antibodies are unable to fight HIV effectively.

One of the authors of the study, Professor Dan Davis from Imperial College London's Department of Life Sciences, explains: "Discovering that these membrane nanotube links exist between T-cells indicates that there may be as-yet undiscovered ways that these types of cells communicate with each other inside the human body.

"Our preliminary results indicate that the nanotubes could play a role in transmitting the HIV virus between immune cells, though this is a very early-stage study," says Professor Davis. "We cannot assume that what we have found in the lab necessarily mirrors exactly what happens in the human body."

This kind of link has previously been observed forming between other kinds of cells, including brain cells and other kinds of immune system cells, but this is the first time that it has been found in T-cells. A similar kind of link is created when cells divide to create new cells, but the newly-discovered nanotubes are different because they have distinct break, or junction, where the membrane material from each of the two cells meets.

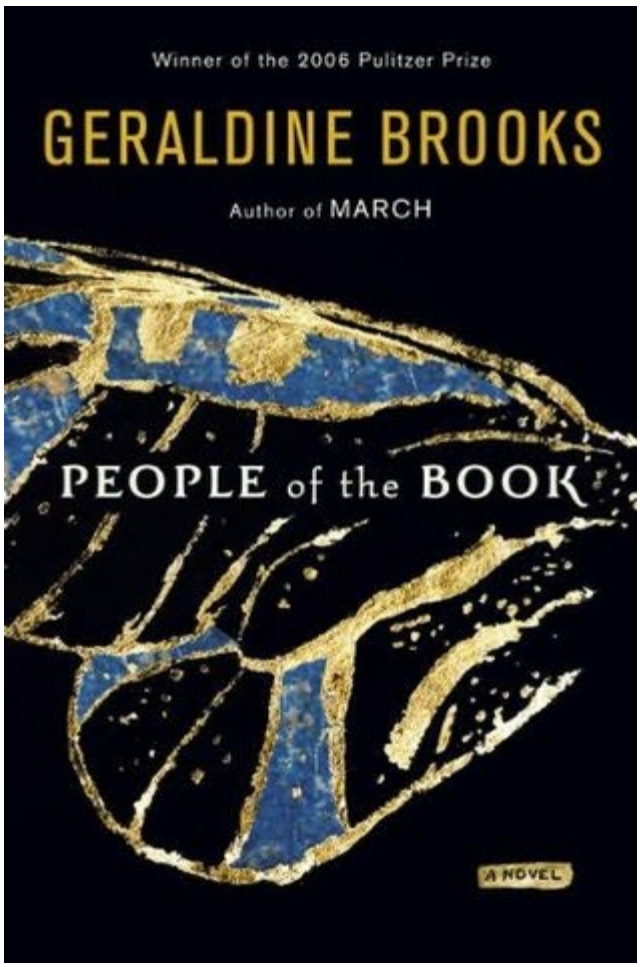
Professor Davis adds that it is possible that other viruses could move along these nanotubes from cell to cell, but that further research is needed to establish whether or not these nanotubes form in the same way in the human body. "If they do, this mechanism of virus transmission could open new avenues for drug targets," he says.

Journal reference: 'Membrane nanotubes physically connect T cells over long distances presenting a novel route for HIV-1 transmission', *Nature Cell Biology*, advanced online publication, Sunday 13 January 2008.

Adapted from materials provided by Imperial College London.

http://www.sciencedaily.com/releases/2008/01/080115093546.htm

Review: Geraldine Brooks' *People of the Book*



For book lovers who are fascinated by the intricacies of gold leaf and vellum as well as the modern forensic techniques that allow experts to restore these precious, old manuscripts, Geraldine Brooks' new novel, *People of the Book*, is like *CSI: The Rare Book Version*.

A vivid trip through the splendors of early bookmaking, *People of the Book* is a suspenseful yarn about Jewish history. It's based on the real Sarajevo Haggadah, the Hebrew holy book that was made in Barcelona around 1350. It escaped the Spanish Inquisition, endured the Nazi occupation of Europe and miraculously survived the Serbian assault on Sarajevo 10 years ago. The Haggadah is incredibly rare because it's a sumptuously illustrated manuscript from a time when many Jews believed any images were against God's law.

But - and this is crucial - beneath the novel's surface of intrigue and artistry, it's really quite simple and sentimental. *People of the Book* is not much more emotionally complex than *Nancy Drew and the Mysterious Manuscript*.

I don't mean to badmouth Nancy Drew, and if you read *People of the Book* with her in mind, you're likely to enjoy the novel. But you would expect something deeper from a Pulitzer Prize-winning author. Brooks' last novel, *March*, which won the Pulitzer, was also an exercise in historic and literary reconstruction, filling in the absent father in Louisa May Alcott's novel, *Little Women*.

Brooks was a *Wall Street Journal* correspondent, and it shows. She's a tremendous researcher, and she re-creates 19th-century America or 15th-century Venice in rich detail. But in both novels the period settings drape a very modern melodrama.

People of the Book, for example, follows Hannah, a rare book expert, as she restores the Sarajevo Haggadah in 1996. Whenever Hannah encounters a puzzling item - a blood stain, a saltwater mark - the novel flashes back to a crucial moment in the manuscript's life. As a result, the story is an interlocked series of little mysteries that unfold over the course of the manuscript's 700-year history.

But as this history unfolds, Brooks' characters fall into obvious types. The Haggadah is saved at different points by enlightened Muslims. And these Muslims are invariably wise and gentle and self-sacrificing and long-suffering -- they're all saints. Put too many saints in a novel, and you get a thin fictional universe. Similarly, the Haggadah is often threatened by anti-Semites who try to destroy it. But the bigots we meet in *People of the Book* are never just workaday folk, the kind who manned the Nazi death camps. Instead, one is a deranged, paranoid syphilitic, another is a self-loathing, alcoholic priest -- in short, average people don't foment prejudice here. Only villainous monsters do.

On top of this, the women through the ages who protect the Haggadah, like Hannah herself, have their troubles but they are all gutsy, intelligent, resourceful and brave. It's not just that they're heroines - they're *contemporary feminist heroines*. In medieval Spain. Or 15th century Venice. At one point in 1940, for instance, a young Bosnian woman realizes the Nazis are evil because they oppose "diversity." Diversity is a fairly recent, multicultural ideal; I doubt anyone in 1940 thought in terms of diversity. Racial purity or tolerance, yes; diversity, no.

The book parts of *People of the Book* are fascinating. The people parts - those are rarely convincing.
http://www.artsjournal.com/bookdaddy/2008/01/review_geraldine_brooks_people.html

We all want excellence - but who will pay for it?

Last Updated: 12:01am GMT 16/01/2008

Rupert Christiansen: The Arts Column

The current confusion in the official attitude to the arts - with the Department of Culture's left hand giving back what its Olympic right hand hath taken away - was compounded by the publication last week of a report by Sir Brian McMaster.

Supporting Excellence in the Arts was commissioned by the Department of Culture, Media and Sport's (DCMS) bushy-tailed minister James Purnell, who has hailed its findings as marking "a real shift" from "measurement to judgment" in how we view and talk about the arts in this country.

"The time has come," Purnell continues, "to reclaim the word 'excellence' from its historic, elitist undertones and to recognise that the very best art and culture is for everyone; that it has the power to change people's lives, regardless of class, education or ethnicity."

There is absolutely nothing new about such rhetoric, and the tone of smiling pomposity will ring somewhat hollow to the 194 organisations reportedly waiting to hear from the DCMS's hitmen at the Arts Council whether their grants have been cut to the point where they can no longer function.

So what effect, if any, will McMaster's report have? I confess to finding it a largely bland and woolly document, lacking in hard or original thinking and skating over several vitally important issues. Worst of all is its reliance on the tired and vacuous concept of "excellence".

Who exactly arbitrates this quality, and on what basis? McMaster's definition gets us nowhere: "Excellence in culture occurs," he writes, "when an experience affects and changes an individual."

Well, plenty of people are affected and changed by addiction to pornography or daytime soaps, but that really doesn't make them "excellent".

McMaster wants this chimerical "excellence" to run alongside "diversity" ("artists, practitioners, organisations and funders must have diversity at the core of their work"), even though this latter quality has been the bugbear of arts policy over the past decade, forcing cultural organisations to "reach out" to ethnic minorities and the disadvantaged as part of the government's insistence that all its limbs subscribe to principles of "social inclusion".

This has led to a huge waste of time and resources on well-meaning but futile initiatives, and it's a pity that McMaster didn't have the courage to point out that most art is culturally highly specific and aesthetically focused, and that what matters more than dragging people into to art galleries and opera houses is inspiring and encouraging them to create their own art, be it am-dram or bhangra.

McMaster is right to urge public service television to take the arts more seriously: the BBC's coverage remains weirdly unbalanced (why that binge of ballet over Christmas, and so little at other times of the year?) and over-obsessed with shallow trends (The Culture Show).

The success of Richard and Judy's Book Club might be a useful starting point, but something needs to be done to about the obsession with competitions leading to overnight stardom.

McMaster is also sound on issues of governance. Ever since the Arts Council abolished advisory panels

of professional practitioners in the early 1990s, decisions about grants have been made robotically by bureaucrats with and boxes to tick.

This has been catastrophic, not least for the way that it has alienated artists and organisations from the Council. McMaster wants artists to run the arts budget again, through more self-assessment and peer review - and, he might have added, much less politicising of the agenda by the DCMS.

But his proposal to privilege 10 organisations with 10-year funding settlements seems to me invidious: a wider spread of three-year funding would be much more to the point, allowing forward planning and space to make the odd mistake.

The idea that there should be more touring and more free access is even more pie-in-the-sky - someone (the taxpayer) is going to have to pay for that, and it won't come cheap.

Which brings me to the crucial question that McMaster blithely ignores. Where is the dosh to come from? Not the Treasury, that's for sure. So, if we are to ride the "cusp of greatness" on which James Purnell thinks our cultural life stands, more must be done to train arts organisations to raise private money.

There is, however, a crucial shortage of people capable of doing this tricky job, vitiated by an almost total lack of training opportunities.

Courses in fund-raising for the arts conducted by our best business schools should be a priority, helping the sector to an increased self-reliance that can only stimulate the creative "risk-taking" of which McMaster's report approves.

http://www.telegraph.co.uk:80/arts/main.jhtml?xml=/arts/2008/01/16/btrupert116.xml

Overlooked classical music treasures that should be unearthed

Joshua Kosman, Chronicle Music Critic
Tuesday, January 15, 2008

The canon of classical music is a hard club to break into. The membership rolls were printed up long ago, and the very predictability of contemporary concert life can be a self-fulfilling prophecy - if a piece is never performed, goes this line of thinking, there's probably a good reason.

But it isn't so. Music history is littered with worthy, beautiful, ingenious or simply charming pieces that have never received their full due.

Some compositions are too unusual, some too conventional. Some decent composers get overshadowed by their genius contemporaries, while others get overtaken by world events. But whatever the reason, there is room for far more variety in our musical diets than we usually get.

Here, in roughly chronological order, is a random sampling of music's secret treasures, a highly personal list of 10 unjustly overlooked pieces or bodies of work. All of them, fortunately, are available on CD.

Tomás Luis de Victoria: Masses and Motets: To some extent, the entire body of Renaissance polyphony is a secret treasure - even in the Bay Area, home of Chanticleer, we hear it all too rarely. And when we do, the focus tends to be on the work of such A-listers as Josquin, Palestrina and Thomas Tallis.

My vote, though, goes to the 16th century Spanish master Tomás Luis de Victoria. He wrote with all the learning and precision of his contemporaries but added a touch of joyous fluidity that leavens even the most intricate counterpoint. David Hill and the Westminster Cathedral Choir offer a lustrous introduction with performances of two of the masses on Hyperion (CDA66114).

Carlo Gesualdo: Madrigals: This princely composer of the late Renaissance tends to get as much ink for his sordid life history (he's got more alleged murders to his credit than anyone else in the New Grove Dictionary) as for his music. But to listen to his madrigals - the Consort of Musicke's newly reissued recording of the Fifth Book on L'Oiseau-Lyre (475 9110 8) is a good place to start - is to be struck by his extravagant inventiveness and bold imagination.

Heinrich Schütz: Sacred vocal music: The title is a cheat - I'm referring to the entire body of work produced over a long career by the greatest German composer of the 17th century. Aside from an early collection of Italian madrigals, Schütz's output consisted almost exclusively of vocal settings from the Bible, the Psalms and other sacred texts, and it's a trove of one magnificent masterpiece after another.

My own entree to his music was through "Saul, Saul," a haunting depiction of Saul's conversion on the road to Damascus, which can be heard on an Archiv recording by John Eliot Gardiner headlined by the noble "Musical Exequies" (423 4052). Then move on to "O quam tu pulchra es," a setting from the Song of Songs that that is surely the sexiest music written before "Tristan."

C.P.E. Bach: Symphonies: Johann Sebastian Bach overshadows not only his contemporaries but his offspring as well - including Carl Philipp Emanuel, the second-born and most brilliant of his musical sons. Yet if we don't hear enough of C.P.E. Bach's music today, the fault is not Papa Bach's but our own.

In particular, the problem is our bad habit of thinking in crisply defined historical periods, which makes someone like C.P.E. Bach - whose heyday was after his father's but before Mozart's - slip between the cracks.

Yet no one who has heard his fierce, audacious music, with its potent rhetorical style and sometimes alarming harmonic shifts, is likely to forget it. The keyboard and chamber music abound in treasures, but the arresting symphonies, smartly performed by the English Concert on a Harmonia Mundi disc (HMU807403), are as good a place to start as any.

John Field: Nocturnes: Chopin perfected the piano nocturne, but he got the idea from the Irish pianist John Field. The whole stylistic constellation of Chopin's music - the expansive left-hand accompaniments, the billowing and increasingly ornamented melodies, the moody harmonies - is already there in Field's nocturnes, recorded complete on Chandos in sumptuous performances by Míceál O'Rourke (8719/20).

Even if the music doesn't boast the same emotional urgency or range of invention as Chopin's subsequent masterpieces, there's still an appealing serenity and charm to Field's writing.

William Sterndale Bennett: Piano concertos: The young band of so-called New Romantics, whose works and reputation Robert Schumann promoted tirelessly through his music criticism during the 1830s, included a roster of familiar names: Chopin, Liszt, Mendelssohn and, of course, himself. But there was one more figure who also habitually made the list, a personable young Englishman abroad named William Sterndale Bennett.

Sterndale Bennett soon went home to his Port and mutton, developing into a more conservative figure and winding up as perhaps the leading English composer of the 19th century, which isn't saying much. But there's an irresistible strain of liveliness that runs through both the dreamy early piano works that Schumann admired and the more tradition-bound music he wrote later.

His piano concertos, which can be heard in an admirable series of recordings by the London Philharmonic Orchestra on the British label Lyrita (204-205), show this quality nicely. The guiding spirits are Mendelssohn and Mozart, but there's a nimble freshness that is the composer's own.

Charles Alkan: "Esquisses": This 19th century Frenchman is in the tradition of piano virtuosos and mystics (read: oddballs) that also includes Scriabin, Busoni and Sorabji. Not all of his piano music is equally rewarding, but the 48 "Sketches" of his Op. 63 - lovingly rendered by Steven Osborne on a Hyperion recording (CDA67377) - are irresistible, full of harmonic ingenuity and striking dramatic effects.

Anton Arensky: Piano trios: A student of Rimsky-Korsakov and younger colleague of Tchaikovsky, Arensky didn't leave a particularly lasting mark on music history. But his two piano trios, which show the influence of both men in their combination of ardent melody and splendid instrumental writing, deserve wider exposure. The Borodin Trio's recording on Chandos (10184) offers stirring renditions of both.

Ruggero Leoncavallo: "La Bohème": Leoncavallo, known today only as the one-hit wonder composer of the inimitable "Pagliacci," went toe-to-toe with Puccini in a race to compose competing operatic versions of Henry Murger's novel "Scenes of the Bohemian Life." He lost decisively. Puccini's opera beat his to the stage by more than a year, and it has never relinquished its hold on the public's affection.

But there's no reason why the competition need be winner-take-all. Leoncavallo's treatment - which features a baritone Rodolfo and a tenor Marcello, just to keep things interesting - includes a wealth of fervent melody and a dark undertone that sets it closer to "Pagliacci" than to the lighter episodes of Puccini's "Bohème." A Munich recording on the Orfeo label (023822) provides an excellent account.

Franz Schmidt: Symphonies: Schmidt, who died in 1939, was one of the minor masters of the last gasp of German Romanticism that ended decisively with World War II. His four symphonies - conservative in aspect, rich in detail - build on the scaffolding of Schubert, Brahms and especially Bruckner.

The buoyant Third Symphony, a centenary tribute on Schubert's death, is my favorite, but there are rewards lurking everywhere. Neeme Järvi conducts all four in a fine box set on Chandos (9568).

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http://sfgate.com/cgi-bin/article.cgi?f=/c/a/2008/01/15/DDG5UENVG.DTL

*This article appeared on page **E - 1** of the San Francisco Chronicle*

The Big Question: Does the decline in book lending spell the end for the public library?

By Michael Savage

Published: 16 January 2008

Why are we asking this now?

Because new figures published yesterday show that we are taking out fewer books from libraries than we were 10 years ago. Library users in England borrowed just under 269 million books in the last financial year, according to official figures compiled by the Chartered Institute of Public Finance and Accountancy. That is down 34 per cent on the amount borrowed back in 1997. And scare stories about library closures continue to hit the headlines. Margaret Hodge, the minister responsible for libraries, admitted at the end of last year that 40 libraries had been closed in the previous 12 months.

It all seems to give the impression that libraries, once so central to communities as the hub of learning and self improvement, are struggling to find a place in the 21st century.

Were they ever really that important?

There are always stories of Victorian workers discussing the merits of H G Wells or Charles Dickens thanks to the free learning provided by libraries, but was that really the case, or just rose-tinted romanticism? According to Jonathan Rose, an expert on the history of the book, it is not far from the truth.

"It wouldn't have been unusual to find mine workers discussing the philosophy of Thomas Carlyle, and that kind of auto-didactic culture in the British working classes could never have flourished without public libraries. They were absolutely central to that culture," he said. "And where there were no public libraries, workers would set up their own and pay for them through deductions in their wages. More than 100 libraries were set up in this way in the South Wales coal mining region."

Are we all reading less these days?

That's not what the level of book sales in the UK suggests – 2007 was a record-breaking year in terms of the amount the British spent on a good read. More than £1.8bn was spent on books last year, a 6.2 per cent increase on the previous year. That was thanks in part to some big releases, such as *Harry Potter and the Deathly Hallows*, which took around £36.5m, and accounted for two per cent of all book sales in 2007. But with seven-and-a-half books sold every second last year, Britons seem keener than ever to get their noses into a book.

Why do we borrow fewer books then?

The rise of huge bookstores and the close competition between them has seen the price of new books plummet in recent times. The average price of all books sold last year was £7.57, and that figure includes the pricier hardbacks. Shoppers can now go to the main book shop on their high street and come out with three bestsellers for around £15. Not only that, but they can enjoy reading their new book with a coffee and a comfy seat without even leaving the store, as major bookstores have coffee shops inside.

According to Professor Rose, changes in education and social mobility must also play a major role in why the library no longer plays as great a role in our lives as it did for past generations. "At the start of the 20th century, the library provided access to learning and betterment for the working classes that wasn't available anywhere else," he said. "Now, with schooling and social mobility so much more comprehensive, people from the working class who show that kind of attitude and desire are creamed off. The library is no longer such a vehicle for social mobility."

Is a lack of funds to blame?

Actually, English libraries receive 17 per cent more funding than they did 10 years ago in real terms. Spending on libraries has now reached almost £1bn a year, up from £662m in 1997. Libraries are also spending just as much on updating their catalogues, which has hovered around the £75m mark since Labour came to power. Supporters say that more funding is needed to improve choice at libraries, though the falling cost of books and the improved buying power of councils have meant that the number of books added to library stocks in England last year was nearly 20 per cent higher than 10 year ago.

So are fewer of us visiting libraries?

Though it is the large decline in the amount of books borrowed that will make the headlines, the stats show that the number of visits to libraries has remained quite steady over the past three years, at around 288 million visits. That's because we are no longer using libraries just for book borrowing. Visitor numbers were falling until libraries began to provide free computer use and internet access. Libraries are also branching out into DVD lending as well. Purists may not like the idea of bookshelves being pushed out for computer terminals, but it could just be that the library is evolving to cater for the demands of today's users.

Shouldn't libraries just supply books?

Some supporters of libraries, such as the author Will Self, have said that libraries should not be forced into providing internet access and DVD rental, but should concentrate on providing more good quality books to visitors. But not all those with an interest in libraries agree.

"A library's core purpose is to provide access to knowledge," said Guy Daines, director of policy at the Chartered Institute of Library and Information Professionals (Cilip). "In modern society, it is now the case that we get our knowledge from more and more sources and it's right that libraries should provide access to those. They complement books, rather than replace them."

Can library borrowing be improved?

Extending opening hours might help, as many people now have irregular work patterns. Opening hours are now increasing. The Government is also trying to do its bit by naming 2008 the Year of Reading, and is running a campaign to encourage parents to read to their children for 10 minutes every day. The Museums, Libraries and Archives Council, which advises the Government on libraries, is aware of the work that it has to do. It says its "challenge" is to reach those people who still cannot afford to buy books, but are still not coming into libraries to borrow.

Advocates of the nation's libraries say that though borrowing may be down, libraries are undergoing a "renaissance" as centres of learning. "Every library now seems to have at least one reading group, while the number of reading festivals connected to libraries is growing," said Mr Daines. "Although action is needed over borrowing, there are many things that libraries are getting right."

Do libraries still have a role in 21st-century Britain?

Yes...

* The number of visits made to libraries has stayed steady over the past three years, even if borrowing has fallen

* People now use libraries for different things, such as internet access and DVD borrowing

* Many libraries are successfully starting reading groups and related events. They do a lot of good work besides book lending

No...

* If someone wants a book, they can buy it much more cheaply than in the past

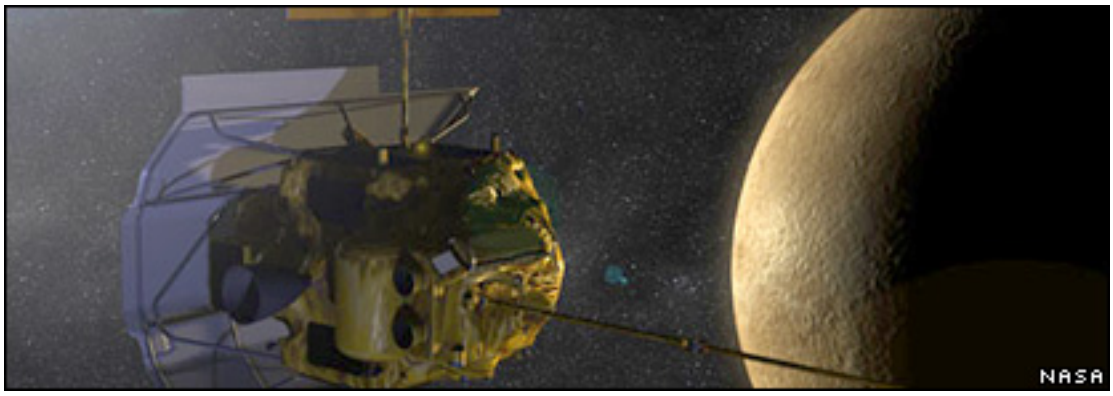
* Libraries' provision of free access to books was all important in the past. Modern schooling and welfare has made this less important

* They have had increased funding and yet have been unable to attract more people to use their services

http://arts.independent.co.uk:80/books/features/article3342156.ece

Nasa spacecraft in Mercury pass

By Jonathan Amos
Science reporter, BBC News



The first probe to visit Mercury in more than 30 years has passed within just 200km (125 miles) of the planet.

The fly-by was the first of three to be made by the Messenger spacecraft as it prepares to enter into orbit around the Solar System's smallest planet in 2011.

The US probe was programmed to collect more than 1,300 images and make other observations during the encounter.

No mission has viewed Mercury up close since the Mariner 10's third and final fly-by in March 1975.

'Lap times'

Marilyn Lindstrom, the US space agency (Nasa) mission's programme scientist, said: "[Messenger's] goal is to understand the surface, the interior, the magnetosphere and the atmosphere of this innermost planet; but in the process of doing that we hope to apply that [knowledge] to understand how all four of the terrestrial, Earth-like, planets formed." Messenger is half-way through what will be a seven-year tour of the inner Solar System.

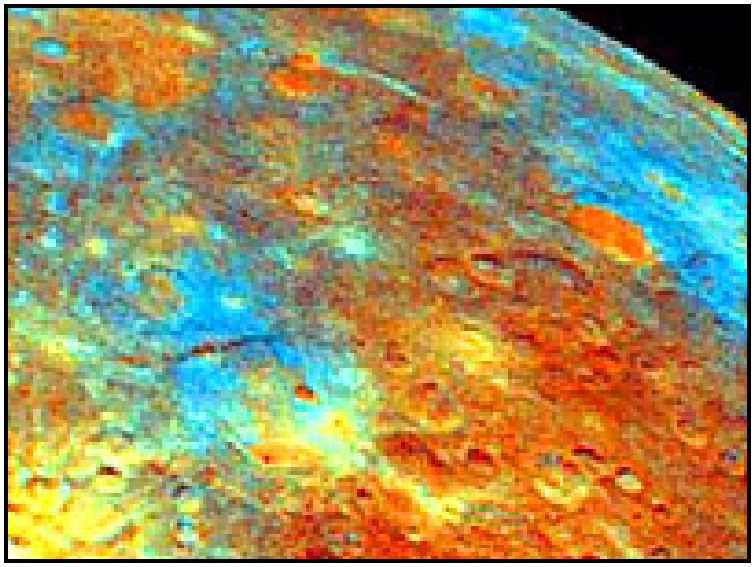
It is not due in orbit around Mercury until March 2011. To get there, it must perform a series of fly-bys and engine firings to put it on a correct course and, crucially, slow its final approach. This week's pass, which took place some 53 million km (33 million miles) from the Sun, was intended to reduce the spacecraft's velocity by 8,000km/h (5,000mph). Even so, it still moved over the cratered surface at a relative speed of 25,000km/h (16,000mph).

"Messenger's orbital period around the Sun will be decreased by 11 days thus setting up a planetary car race with Mercury," explained Eric Finnegan, mission systems engineer at Johns Hopkins University Applied Physics Laboratory. "Using its engine and future gravity assists, the spacecraft after being lapped by Mercury many times in its race around the Sun will eventually match the 88-day orbital period of the innermost planet."

Strange world

Messenger began its fly-by observations on Sunday. The probe's instruments were expected to gather about 700GB of data in total over a period of 55 hours.

The moment of closest approach occurred at 1904 GMT on Monday. The data treasure from the pass was due to be transmitted to Earth on Tuesday.



Messenger is operating in an extremely harsh environment.

Its electronics and observational instruments are protected behind a shield that allows them to operate at "room temperature". The Sun-facing side of the shield, however, experiences temperatures in excess of 300C. All the terrestrial planets are believed to have formed at the same time by common processes - but Mercury itself is a bit of an oddball. It is so dense that more than two-thirds of it has to be of an iron-metal composition. It is so close to the Sun that the temperature variation between day and night at the equator is more than 600 degrees; and yet there may be water-ice at the poles in craters that are in permanent shadow.

Europeans to follow

"Mariner 10 showed us a surface that was so heavily cratered that it looked like geological activity on Mercury ended very early in the history of the Solar System," said Sean Solomon, Messenger's principal investigator from the Carnegie Institution of Washington. "And yet, Mercury is the only other inner planet that like Earth has a magnetic field which we believe means it must have a very dynamic molten iron core. "So how to reconcile this ancient surface with this modern-day internal dynamic activity is one of the mysteries we hope to solve."

Messenger's first fly-by was designed to:

- obtain the first detailed view of the hemisphere of the planet missed by Mariner 10 (it only saw 45% of the planet's surface)
- make the first measurements of the elemental composition of Mercury's surface
- use a laser altimeter to study the shape and topography of the planet
- take gravity measurements to try to understand better Mercury's internal structure

On Friday this week, the European Space Agency (Esa) will sign an industrial contract with EADS Astrium to build BepiColombo. This mission will be launched to Mercury in 2013. It consists of two spacecraft - an orbiter for planetary investigation, led by Esa, and one for magnetospheric studies, led by the Jaxa (Japan Aerospace Exploration Agency).

The satellite duo will reach Mercury in 2019 after a six-year journey towards the inner Solar System.

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Story from BBC NEWS: http://news.bbc.co.uk/go/pr/fr/-/1/hi/sci/tech/7183846.stm

Published: 2008/01/14 21:56:01 GMT

EU rethinks biofuels guidelines
By Roger Harrabin
Environment Analyst, BBC News

Palm plantations are replacing the original forest in some areas

Europe's environment chief has admitted that the EU did not foresee the problems raised by its policy to get 10% of Europe's road fuels from plants.

Recent reports have warned of rising food prices and rainforest destruction from increased biofuel production.

The EU has promised new guidelines to ensure that its target is not damaging.

EU Environment Commissioner Stavros Dimas said it would be better to miss the target than achieve it by harming the poor or damaging the environment.

Clampdown promised

A couple of years ago biofuels looked like the perfect get-out-of-jail free card for car manufacturers under pressure to cut carbon emissions.

Instead of just revolutionising car design they could reduce transport pollution overall if drivers used more fuel from plants which would have soaked up CO2 while they were growing.

The EU leapt at the idea - and set its biofuels targets.

Since then reports have warned that some biofuels barely cut emissions at all - and others can lead to rainforest destruction, drive up food prices, or prompt rich firms to drive poor people off their land to convert it to fuel crops.

"We have seen that the environmental problems caused by biofuels and also the social problems are bigger than we thought they were. So we have to move very carefully," Mr Dimas told the BBC.

"We have to have criteria for sustainability, including social and environmental issues, because there are some benefits from biofuels."

He said the EU would introduce a certification scheme for biofuels and promised a clampdown on biodiesel from palm oil which is leading to forest destruction in Indonesia.

Some analysts doubt that "sustainable" palm oil exists because any palm oil used for fuel simply swells the demand for the product oil on the global market which is mainly governed by food firms.

US expansion

Mr Dimas said it was vital for the EU's rules to prevent the loss of biodiversity which he described as the other great problem for the planet, along with climate change.

On Monday, the Royal Society, the UK's academy of science, is publishing a major review of biofuels. It is expected to call on the EU to make sure its guidelines guarantee that all biofuels in Europe genuinely save carbon emissions.

In the US the government has just passed a new energy bill mandating a major increase in fuel from corn, which is deemed by some analysts to be useless in combating rising carbon dioxide emissions.

The bill also foresees a huge expansion in fuel from woody plants but the technology for this is not yet proven on a commercial scale.

Sonja Vermeulen from the International Institute for Environment and Development's Forestry and Land Use Programme applauded Mr Stavros' promise to impose rigorous standards on biofuels.

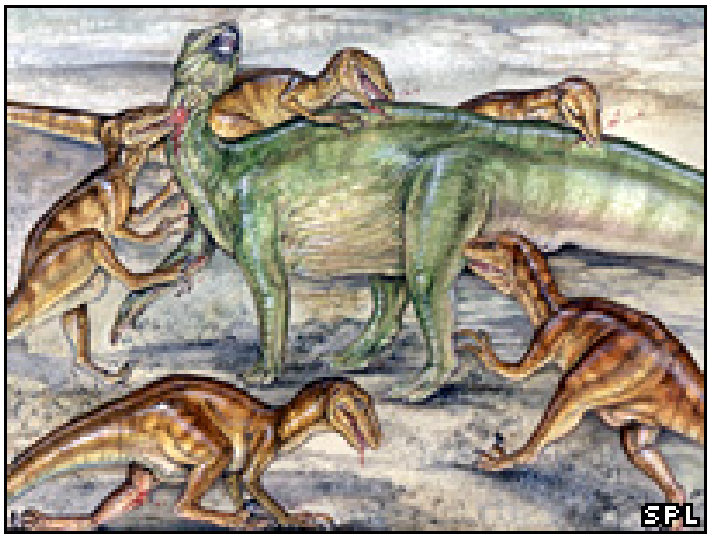
"The EU announcement is an important step towards reconciling the highly polarised positions of biofuels supporters (mainly governments, investment agencies and large companies) and detractors (mainly environmental NGOs and lobby groups)," the researcher said.

"In reality, policy decisions about biofuels involve difficult trade-offs: carbon benefits versus other environmental benefits; food security versus export development; efficient large-scale production versus smaller-scale or mixed production systems that deliver more equitable rural development.

"We hope that any new certification scheme for biofuels considers the distribution of costs and benefits of the scheme, especially to poorer producers and consumers."

http://news.bbc.co.uk/2/hi/europe/7186380.stm

Dinosaurs 'grew fast, bred young'
By Helen Briggs
Science reporter, BBC News



Plant-eating *Tenontosaurus* was vulnerable to attack

Dinosaurs bred as early as age eight, long before they reached adult size, fossil evidence suggests.

Although they were descended from reptiles, and evolved into birds, dinosaurs grew fast and bred young, much like the mammals of today.

Researchers at the University of California found hallmark "egg-making" tissue in two juvenile females.

They say early sexual maturity was needed for survival, so females could lay eggs before becoming prey.

Calcium-rich medullary bone, which, in birds, is used to produce egg shells, was found inside the fossilised shin-bones of two specimens: the meat-eating *Allosaurus* and the plant-eater *Tenontosaurus*.

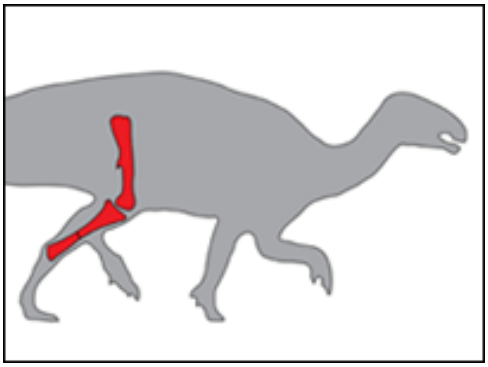
Sarah Werning and Andrew Lee of the University of California (UC), Berkeley, deduced from growth rings inside the bone that the two females were aged eight and 10, very young for dinosaurs, which lived to about 30.

Medullary bone has previously been found in a female *Tyrannosaurus rex*, and the scientists confirmed this finding, putting her age at 18.

"We were lucky to find these female fossils," said Sarah Werning. "Medullary bone is only around for three to four weeks in females who are reproductively mature, so you'd have to cut up a lot of dinosaur bones to have a good chance of finding this."

Growth clues

Studies of the tell-tale growth rings in dinosaur bones have revealed much about the way they grew.



Dinosaurs grew faster than present-day reptiles and had only a limited lifespan as adults before they fell victim to predator attack.

Like many groups, *Tenontosaurus*, which lived in North America during the Early Cretaceous period, 125 to 105 million years ago, would have had to reproduce young to ensure survival of the species.

"These were prey dinosaurs, so they were probably taken out when really young and small, or when old," Sarah Werning explained. "So, if you don't reproduce early, you lose your chance."

The discovery adds weight to the idea that dinosaurs were more like birds than reptiles. It also suggests that the reproductive strategy of modern birds is an ancient one, dating back some 200 million years, to when dinosaurs first evolved.

"This shows us beyond any doubt how fast dinosaurs grow," said Kevin Padian, a professor at UC Berkeley's Museum of Palaeontology, who was the students' advisor.

"They're growing as fast as big birds and big mammals," he told the BBC.

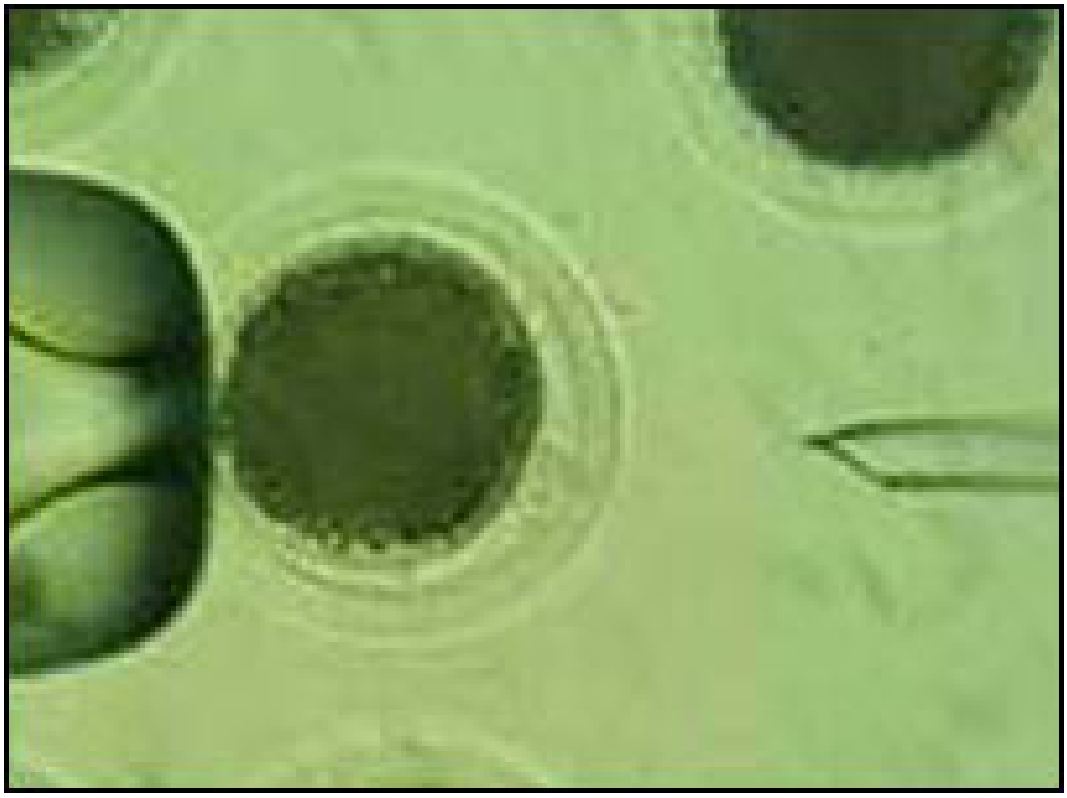
"To do this you can't have the metabolism of a crocodile; you need to have the metabolism more of a bird or a mammal."

http://news.bbc.co.uk/2/hi/science/nature/7181993.stm

US approves animal clones as food

By Richard Black
Environment correspondent, BBC News website

The US government has given the green light to the production and marketing of foods derived from cloned animals.



After six years of study, the Food and Drug Administration (FDA) ruled that meat and milk from cloned pigs, cattle and goats and their offspring is safe.

Lack of data meant the agency could not reach a decision on sheep products.

The FDA does not expect to see a lot of products from cloned animals being sold now, because of cost. It expects clones would first be used for breeding.

The agency released almost identical draft conclusions in December 2006. Since then, new scientific information has strengthened its central view.

Just because something was created in a lab, doesn't mean we should have to eat it
Senator Barbara Mikulski

"After reviewing additional data and the public comments in the intervening year since the release of our draft documents on cloning, we conclude that meat and milk from cattle, swine, and goat clones are as safe as the food we eat every day," said Stephen Sundlof, director of the FDA's Center for Food Safety and Applied Nutrition.

The FDA will not require food derived from cloned animals to be labelled as such.

Low confidence

The agency was criticised by activist groups and by US politicians who were not convinced that enough scientific data was available to justify a decision.

"The FDA has acted recklessly, and I am profoundly disappointed in their rush to approve cloned foods," said Maryland Senator Barbara Mikulski, co-sponsor of a bill amendment passed by the US Senate which asked the FDA not to rule until further research was available.

"Just because something was created in a lab, doesn't mean we should have to eat it."

Her criticisms were echoed by Andrew Kimbrell of the Center for Food Safety, a prominent US pressure group.

"The FDA's bull-headed action disregards the will of the public and the Senate and opens a literal Pandora's Box," he said.

"The FDA based their decision on an incomplete and flawed review that relies on studies supplied by cloning companies that want to force cloning technology on American consumers."

A survey in 2005 by the Pew Charitable Trusts found that two-thirds of US consumers were "uncomfortable" with animal cloning; nearly half believed food from clones would be unsafe to eat.

Some US food companies have indicated they do not plan to stock products derived from cloned animals.

But Smithfields, which claims to be the biggest producer of pigs and pork products in the country, left the door open to a change of tack, saying it would "continue to monitor further scientific research on this technology" and was committed to improving its products "through careful selective breeding and genetic research".

Breeders themselves expressed their approval.

"The biotechnology industry applauds the FDA for its comprehensive scientific review of this new assisted reproductive technology," said Jim Greenwood, president and CEO of the Biotechnology Industry Organization (Bio), which represents companies and institutions in the biotech field.

"Cloning... can effectively help livestock producers deliver what consumers want: high-quality, safe, abundant and nutritious foods in a consistent manner."

Delayed action

US authorities do not expect to see a wave of products derived from cloned animals on the shelves immediately.

Creating a clone is far more expensive than breeding animals conventionally. The US Department of Agriculture (USDA) believes it is more likely that companies will produce clones with "desirable" traits, breed them, and bring products from the offspring into the food chain.

The USDA is asking companies not to market products immediately, but to continue observing the moratorium they agreed to in 2001 when the FDA began its deliberations.

"USDA encourages the cloning industry continue its voluntary moratorium for a sufficient period of time to prepare so that a smooth and seamless transition into the marketplace can occur," it said in a statement.

The US developments will be watched closely in Europe, where evaulation of cloned animals is at an earlier stage.

Last week the European Food Safety Authority (Efsa) initiated a public consultation on its draft guidance.

The draft concluded, among other things, that:

- foods from cloned pigs and cattle are essentially identical to those from conventionally bred animals
- animal cloning is unlikely to have environmental impacts
- there are health and welfare issues, but these are likely to diminish as technology progresses

The EU has indicated that if products from cloned animals were approved, they would have to be labelled.

This contrasts directly with the US position, opening up the possibility of trade disputes similar to the lengthy and costly row between the EU and US over genetically modified foods.

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Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/7190305.stm

Published: 2008/01/15 20:48:15 GMT

Acrylamide In Food May Increase Risk Of Breast Cancer, New Findings Suggest

Acrylamide is thus found in a number of foods, such as bread, crisps, French fries and coffee. Researchers found a link between an increased acrylamide-hemoglobin level and the development of breast cancer. (Credit: iStockphoto/Ivan Mateev)

ScienceDaily (Jan. 16, 2008) — Acrylamide is a chemical formed when frying, roasting, grilling or baking carbohydrate-rich foods at temperatures above 120°C. Acrylamide is thus found in a number of foods, such as bread, crisps, French fries and coffee. Tobacco smoking also generates substantial amounts of acrylamide.

"Animal tests have shown acrylamide to be a carcinogen, but until recently no studies have demonstrated a link between acrylamide in foods and cancer in humans. Ours is the first epidemiological study using biological markers for measuring acrylamide exposure, and the first to report a positive association between acrylamide and breast cancer," says Henrik Frandsen, senior scientist at the National Food Institute, Technical University of Denmark.

Positive association

The study comprises 374 postmenopausal women who developed breast cancer and 374 healthy women as controls. All of them are included in the Danish Cancer Society's "Diet, Cancer and Health" cohort study which enrolled 29,875 women aged 50 to 64 years in the period 1993-1997.

All previous epidemiological studies have been based on food frequency questionnaires. The scientists behind this study have instead used biological markers to be able to more accurately determine the acrylamide levels ingested by the women participating in the study. The women's blood has been tested for the level of acrylamide bound to haemoglobin in red blood cells.

The findings show a positive association between an increased acrylamide-haemoglobin level and the development of breast cancer after adjustment for smoking behaviour. The risk of breast cancer doubles with a tenfold increase in the acrylamide-haemoglobin level. A tenfold increase in the acrylamide-haemoglobin level corresponds more or less to the difference measured between the women with the lowest and highest exposure. The study also shows a stronger association for estrogen receptor positive breast cancer.

Further research required

The findings strengthen the concern that acrylamide is carcinogenic in the quantities to which ordinary people are exposed through their diet. It should also be noted that a new Dutch study shows an association between acrylamide in foods and ovarian and endometrial cancer.

"It is, however, important to stress that neither study indicates an unambiguous association between acrylamide in foods and cancer. It is, for example, uncertain whether the observed effect on breast cancer is instead related to other chemical compounds formed along with acrylamide during the heating of foods. Another uncertainty is whether some of the acrylamide originates from sources other than foods," says Pelle Thonning Olesen, scientist at the National Food Institute, Technical University of Denmark.

"Further research into the potential adverse effects of acrylamide is imperative before any definite conclusions can be drawn on the significance of the substance for cancer in general. At the same time, it emphasises the importance of continuing the research and initiatives aimed to reduce acrylamide levels in the human diet," adds Anne Tjønneland, chief physician at the Danish Cancer Society.

The paper in which the new research findings are described is published in the International Journal of Cancer: Acrylamide exposure and incidence of breast cancer among postmenopausal women in the Danish Diet, Cancer and Health study. http://www3.interscience.wiley.com/cgi-bin/fulltext/117881842/HTMLSTART

The research project was conducted by scientists from the National Food Institute, Technical University of Denmark in collaboration with the Institute of Cancer Epidemiology, the Danish Cancer Society as part of the HEATOX EU project. See http://www.heatox.org for information about how to manage the acrylamide risk.

The project was funded by the EU's Sixth Framework Programme and by a grant from the Nordic Council of Ministers and was completed with support from the National Food Institute, Technical University of Denmark and the Danish Cancer Society.

Adapted from materials provided by Technical University of Denmark.

http://www.sciencedaily.com/releases/2008/01/080111231742.htm

Molecular Evolution: Mice Given Bat-like Forelimbs Through Gene Switch

Shown above is an example of the bat species whose DNA was used to insert into the mice in the study. (Credit: Image courtesy of Dr. Richard Behringer, University of Texas M. D. Anderson Cancer Center)

ScienceDaily (Jan. 16, 2008) — A research team led by Dr. Richard Behringer at MD Anderson Cancer Center reports that they have successfully switched the mouse Prx1 gene regulatory element with the Prx1 gene regulatory region from a bat -- and although these two species are separated by millions of years of evolution -- the resulting transgenic mice displayed abnormally long forelimbs.

While forelimb length is just one of several key morphological changes that occurred during the evolution of the bat wing, this unprecedented finding demonstrates that evolution can be driven by changes in the patterns of gene expression, rather than solely by changes in the genes, themselves.

Prx1 is a paired-box homeodomain transcription factor, with an established role in limb bone growth. Dr. Behringer and colleagues identified a conserved Prx1 enhancer domain, which regulates expression of Prx1 in the developing forelimb.

To study the evolutionary contribution of the Prx1 enhancer to the morphological differences between the bat and mouse forelimb, Dr. Behringer and colleagues replaced the endogenous mouse Prx1 enhancer with that of the bat. The transgenic mice showed higher expression levels of Prx1 in the perichondrium, increased chondrocyte proliferation, and ultimately, longer forelimbs.

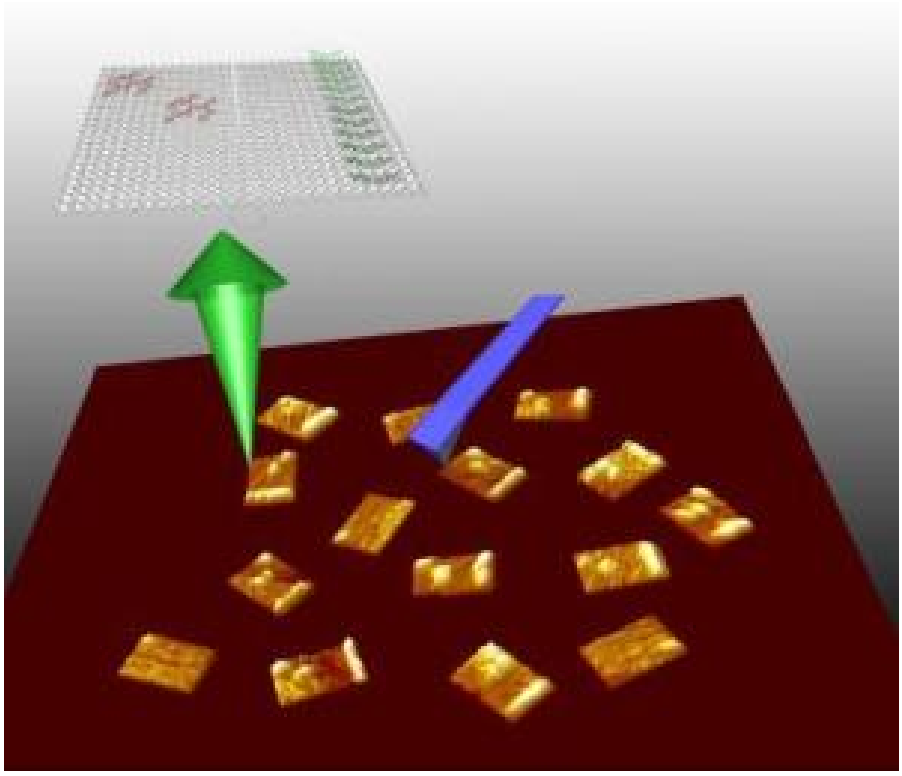
Dr. Behringer describes the significance of his finding as such: "Darwin suggested that "successive slight modifications" would ultimately result in the evolution of diverse limb morphologies, like a hand, wing, or fin. The genetic change we engineered in mice may be one of those "slight modifications" to evolve a mammalian wing."

This research was published In the January 15th issue of Genes and Development.

Adapted from materials provided by Cold Spring Harbor Laboratory.

http://www.sciencedaily.com/releases/2008/01/080114173923.htm

Nanotechnology Innovation May Revolutionize Gene Detection In A Single Cell



By controlling the exact position and location of the chemical bases within a synthetic replica of DNA, Yan programmed a single stranded genomic DNA, M13, into nanotiles to contain the probes for specific gene expression targets. On the surface of each DNA probe tile is a dangling single stranded piece of DNA that can bind to the RNA target of interest. Each probe actually contains two half probes, so when the target RNA comes in, it will hybridize to the half probes and turn the single stranded dangling probes into a stiff structure. The group uses a powerful instrument, atomic force microscopy (AFM), which allows the researchers to image the tiles at the single molecule level. After binding to the DNA probe, the DNA-RNA hybridization becomes stiffened, it can be sensed by the atomic force microscope cantilever (blue arm), shown by bright line on the DNA tile, which is due to a height increase. The result is a mechanical, label-free detection of RNA. (Credit: Hao Yan)

ScienceDaily (Jan. 16, 2008) — Scientists at Arizona State University's Biodesign Institute have developed the world's first gene detection platform made up entirely from self-assembled DNA nanostructures. The results, appearing in the January 11 issue of the journal Science, could have broad implications for gene chip technology and may also revolutionize the way in which gene expression is analyzed in a single cell.

"We are starting with the most well-known structure in biology, DNA, and applying it as a nano-scale building material, " said Hao Yan, a member of the institute's Center for Single Molecule Biophysics and an assistant professor of chemistry and biochemistry in the College of Liberal and Sciences.

Yan is a researcher in the fast-moving field known as structural DNA nanotechnology -- that assembles the molecule of life into a variety of nanostructures with a broad range of applications from human health to nanoelectronics.

Yan led an interdisciplinary ASU team to develop a way to use structural DNA nanotechnology to target the chemical messengers of genes, called RNA.

The team included: lead author and chemistry and biochemistry graduate student Yonggang Ke; assistant professor of chemistry and biochemistry Yan Liu; Center for Single Molecule Biophysics

director and physics professor Stuart Lindsay; and associate professor in the School of Life Sciences, Yung Chang.

"This is one of the first practical applications of a powerful technology, that, till now, has mainly been the subject of research demonstrations," said Lindsay. "The field of structural DNA nanotechnology has recently seen much exciting progress from constructing geometrical and topological nanostructures through tile based DNA self-assembly initially demonstrated by Ned Seeman, Erik Winfree and colleagues," said Yan.

A recent breakthrough of making spatially addressable DNA nanoarrays came from Paul Rothemund's work on scaffolded DNA origami, a method in which a long, single-stranded viral DNA scaffold can be folded and stapled by a large number of short synthetic "helper strands" into nanostructures that display complex patterns.

"But the potential of structural DNA nanotechnology in biological applications has been underestimated, and if we look at the process of DNA self-assembly, you will be amazed that trillions of DNA nanostructures can form simultaneously in a solution of few microliters, and very importantly, they are biocompatible and water soluble," said Yan.

DNA chip and microarray technology have become a multi-billion dollar industry as scientists use it to examine thousands of genes at the same time for mutations or uncovering clues to disease. However, because DNA probes are pinned to the solid surface of the microarray chips, it is relatively slow process for the targets to search and find the probes. Also, it is hard to control the distances between the probes with nanometer accuracy.

"In this work, we developed a water soluble nanoarray that can take advantage of the DNA self-assembling process and also have benefits that the macroscopic DNA microchip arrays do not have," said Yan. "The arrays themselves are reagents, instead of solid surface chips."

To make the DNA origami RNA probes, Yan has taken advantage of the basic DNA pairing rules in the DNA chemical alphabet ("A" can only form a zipper-like chemical bond with "T" and "G" only pair with "C"). By controlling the exact position and location of the chemical bases within a synthetic replica of DNA, Yan programmed a single stranded genomic DNA, M13, into nanotiles to contain the probes for specific gene expression targets.

Yan refers to the self-assembled DNA nanoarrays as nucleic acid probe tiles, which look like a nanosized postage stamp. In a single step, the M13 scaffold system can churn out as many as 100 trillion of the tiles with close to100 percent yield.

Yan's team designed three different DNA probe tiles to detect three different RNA genes along with a bar code index to tell the tiles apart from each other. "Each probe can be distinguished by its own bar code, so we mixed them together in one solution and we used this for multiplex detection," said Yan. The group uses a powerful instrument, atomic force microscopy (AFM), which allows the researchers to image the tiles at the single molecule level.

On the surface of each DNA probe tile is a dangling single stranded piece of DNA that can bind to the RNA target of interest. "Each probe actually contains two half probes, so when the target RNA comes in, it will hybridize to the half probes and turn the single stranded dangling probes into a stiff structure," said Yan. "When it is stiffened, it will be sensed by the atomic force microscope cantilever, and you can see a bright line, which is a height increase. The result is a mechanical, label-free detection."

The technology is able to detect minute quantities of RNA. "Since the DNA-RNA hybridization has such a strong affinity, in principle, a single molecule would be able to hybridize to the probe tile," said Yan.

Although there are still many technical hurdles yet to overcome, the group is excited about the potential applications of the technology. "What our approach provides is that the probe tiles are a water-soluble reagent, so the sample volume can potentially be shrunk down to the volume of a single cell level. Our ultimate goal is to detect RNA gene expression at the single cell level."

The research was performed in the Biodesign Institute's Center for Single Molecule Biophysics, Center for Infectious Diseases and Vaccinology, and ASU's Department of Chemistry and Biochemistry, Department of Physics and School of Life Sciences.

This research is partly supported by funding from NIH and from NSF, U.S. Air Force Office of Scientific Research, and Office of Naval Research.

Adapted from materials provided by Arizona State University.

http://www.sciencedaily.com/releases/2008/01/080110144839.htm

Aggression As Rewarding As Sex, Food And Drugs, New Research Shows

The human brain processes aggression as a reward -- much like sex, food and drugs -- offering insights into our propensity to fight and our fascination with violent sports like boxing and football, researchers report. (Credit: iStockphoto/Piotr Sikora)

ScienceDaily (Jan. 15, 2008) — New research from Vanderbilt University shows for the first time that the brain processes aggression as a reward - much like sex, food and drugs - offering insights into our propensity to fight and our fascination with violent sports like boxing and football.

"Aggression occurs among virtually all vertebrates and is necessary to get and keep important resources such as mates, territory and food," Craig Kennedy, professor of special education and pediatrics, said. "We have found that the 'reward pathway' in the brain becomes engaged in response to an aggressive event and that dopamine is involved."

"It is well known that dopamine is produced in response to rewarding stimuli such as food, sex and drugs of abuse," Maria Couppis, who conducted the study as her doctoral thesis at Vanderbilt, said. "What we have now found is that it also serves as positive reinforcement for aggression."

For the experiments, a pair of mice - one male, one female - was kept in one cage and five "intruder" mice were kept in a separate cage. The female mouse was temporarily removed, and an intruder mouse was introduced in its place, triggering an aggressive response by the "home" male mouse. Aggressive behavior included tail rattle, an aggressive sideways stance, boxing and biting.

The home mouse was then trained to poke a target with its nose to get the intruder to return, at which point it again behaved aggressively toward it. The home mouse consistently poked the trigger, which was presented once a day, indicating it experienced the aggressive encounter with the intruder as a reward.

The same home mice were then treated with a drug that suppressed their dopamine receptors. After this treatment, they decreased the frequency with which they instigated the intruder's entry.

In a separate experiment, the mice were treated with the dopamine receptor suppressors again and their movements in an open cage were observed. They showed no significant changes in overall movement compared to times when they had not received the drugs. This was done to demonstrate that their decreased aggression in the previous experiment was not caused by overall lethargy in response to the drug, a problem that had confounded previous experiments.

The Vanderbilt experiments are the first to demonstrate a link between behavior and the activity of dopamine receptors in response to an aggressive event.

"We learned from these experiments that an individual will intentionally seek out an aggressive encounter solely because they experience a rewarding sensation from it," Kennedy said. "This shows for the first time that aggression, on its own, is motivating, and that the well-known positive reinforcer dopamine plays a critical role."

Kennedy is chair of Vanderbilt's Peabody College of education and human development's special education department, which is consistently ranked as the top special education program in the nation. He is also director of the Vanderbilt Kennedy Center for Research of Human Development's Behavior Analysis Clinic.

Couppis conducted her research in affiliation with the Vanderbilt Brain Institute. She is also affiliated with the Vanderbilt Kennedy Center for Research on Human Development and the Vanderbilt Center for Integrative and Cognitive Neuroscience.

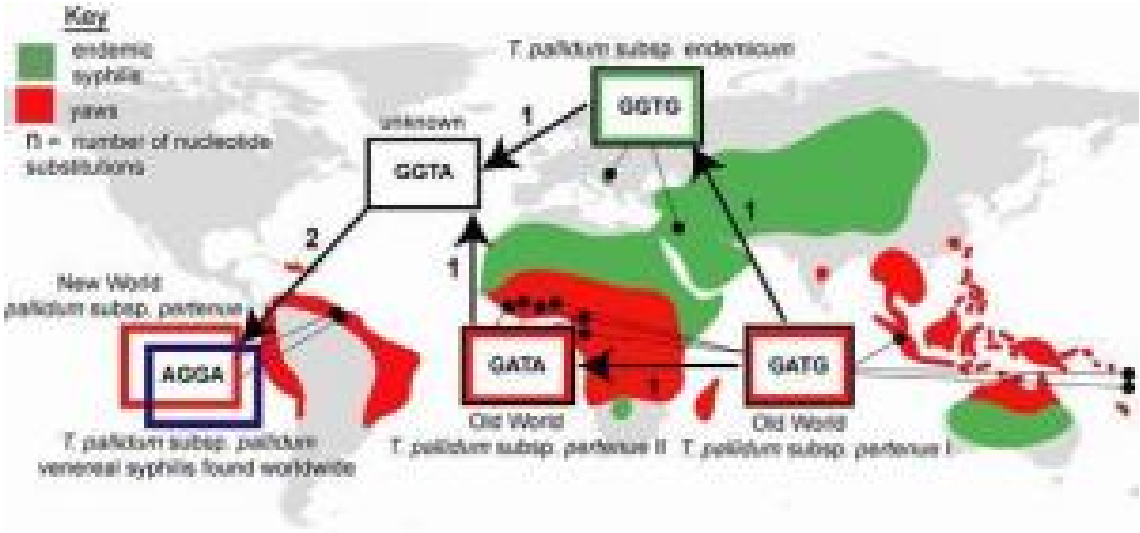
The research will be published online the week of Jan. 14 by the journal Psychopharmacology.

The research was supported by a Discovery Grant from Vanderbilt University.

Adapted from materials provided by Vanderbilt University.

http://www.sciencedaily.com/releases/2008/01/080114103723.htm

Columbus May Have Brought Syphilis To Europe From New World



A network path for four informative substitutions shows that New World subsp. pertenue, or yaws-causing strains, are the closest relatives of modern subsp. pallidum strains. On the map green represents endemic syphilis; red, yaws; numbers show the number of nucleotide substitutions. (Credit: Harper KN, Ocampo PS, Steiner BM, George RW, Silverman MS, et al.)

ScienceDaily (Jan. 15, 2008) — Did Columbus and his men introduce the syphilis pathogen into Renaissance Europe after contracting it during their voyage to the New World? Or does syphilis have a much longer history in the Old World? The most comprehensive comparative genetic analysis conducted on the family of bacteria (the treponemes) that cause syphilis and related diseases such as yaws supports the so-called "Columbian theory" of syphilis's origins.

Kristin Harper (Emory University, Atlanta, USA) approached this centuries-old debate by using phylogenetics -- the study of the evolutionary relatedness between organisms -- to study 26 geographically disparate strains of treponemes. The venereal syphilis-causing strains originated most recently, and their closest relatives were strains collected in South America that cause the treponemal disease yaws.

"That supports the hypothesis that syphilis -- or some progenitor -- came from the New World," Harper says.

While it is generally agreed that the first recorded epidemic of syphilis occurred in Europe in 1495, controversy has raged ever since over the origin of the pathogen. Most of the evidence in recent years has come from bones of past civilizations in both New World and Old World sites, since chronic syphilis causes skeletal lesions. In many cases, however, skeletal analysis is inconclusive, due to problems with pinpointing the age of the bones and the lack of supporting epidemiological evidence.

Further complicating the research is the fact that the family of Treponema bacteria causes different diseases that share some symptoms but have different modes of transmission. Syphilis is sexually transmitted, but yaws and endemic syphilis are tropical diseases that are transmitted through skin-to-skin or oral contact. One hypothesis is that a subspecies of Treponema from the warm, moist climate of the tropical New World mutated into the venereal, syphilis-causing subspecies to survive in the cooler and relatively more hygienic European environment.

The phylogenetic analysis indicated that yaws is an ancient infection in humans while venereal syphilis arose relatively recently. The study results are especially significant due to the large number of different strains analyzed, including two never-before-sequenced strains of yaws from isolated

inhabitants of Guyana's interior. At Harper's request, the Guyana samples were collected during a medical mission by Ve'ahavta, the Canadian Jewish Humanitarian and Relief Committee.

"Syphilis was a major killer in Europe during the Renaissance," says co-author George Armelagos, a skeletal biologist whose research put him at the forefront of the syphilis debate 30 years ago. "Understanding its evolution is important not just for biology, but for understanding social and political history. It could be argued that syphilis is one of the important early examples of globalization and disease, and globalization remains an important factor in emerging diseases."

Citation: Harper KN, Ocampo PS, Steiner BM, George RW, Silverman MS, et al. (2008) On the Origin of the Treponematoses: A Phylogenetic Approach. PLoS Negl Trop Dis 2(1): e148. doi:10.1371/journal.pntd.0000148

Adapted from materials provided by PLoS Neglected Tropical Diseases.

http://www.sciencedaily.com/releases/2008/01/080114213238.htm

Probiotics Affect Metabolism, Says New Study

ScienceDaily (Jan. 16, 2008) — Probiotics, such as yogurt drinks containing live bacteria, have a tangible effect on the metabolism, according to the results of a new study published January 15 in the journal Molecular Systems Biology.

The research is the first to look in detail at how probiotics change the biochemistry of bugs known as gut microbes, which live in the gut and which play an important part in a person's metabolic makeup. Different people have different types of gut microbes inside them and abnormalities in some types have recently been linked to diseases such as diabetes and obesity.

For the study, researchers from Imperial College London and Nestlé Research Center, Lausanne, Switzerland, gave two different types of probiotic drink to mice that had been transplanted with human gut microbes. Probiotics contain so-called 'friendly' bacteria and there is some evidence to suggest that adding 'friendly' bacteria to the gut can help the digestive system.

The researchers compared the levels of different metabolites in the liver, blood, urine, and feces, of mice who had received treatment with probiotics and those that had not.

They found that treatment with probiotics had a whole range of biochemical effects and that these effects differed markedly between the two probiotic strains, Lactobacillus paracasei and Lactobacillus rhamnosus. Adding 'friendly' bacteria changed the makeup of the bugs in the gut, not only because this increased the number of such bacteria, but also because the 'friendly' bacteria worked with other bacteria in the gut, amplifying their effects.

One of the many biochemical changes observed by the researchers was a change in how mice treated with probiotics metabolised bile acids. These acids are made by the liver and their primary function is to emulsify fats in the upper gut. If probiotics can influence the way in which bile acids are metabolised, this means they could change how much fat the body is able to absorb.

Professor Jeremy Nicholson, corresponding author on the study from the Department of Biomolecular Medicine at Imperial College, explained "Some argue that probiotics can't change your gut microflora - whilst there are at least a billion bacteria in a pot of yoghurt, there are a hundred trillion in the gut, so you're just whistling in the wind.

"Our study shows that probiotics can have an effect and they interact with the local ecology and talk to other bacteria. We're still trying to understand what the changes they bring about might mean, in terms of overall health, but we have established that introducing 'friendly' bacteria can change the dynamics of the whole population of microbes in the gut," he said.

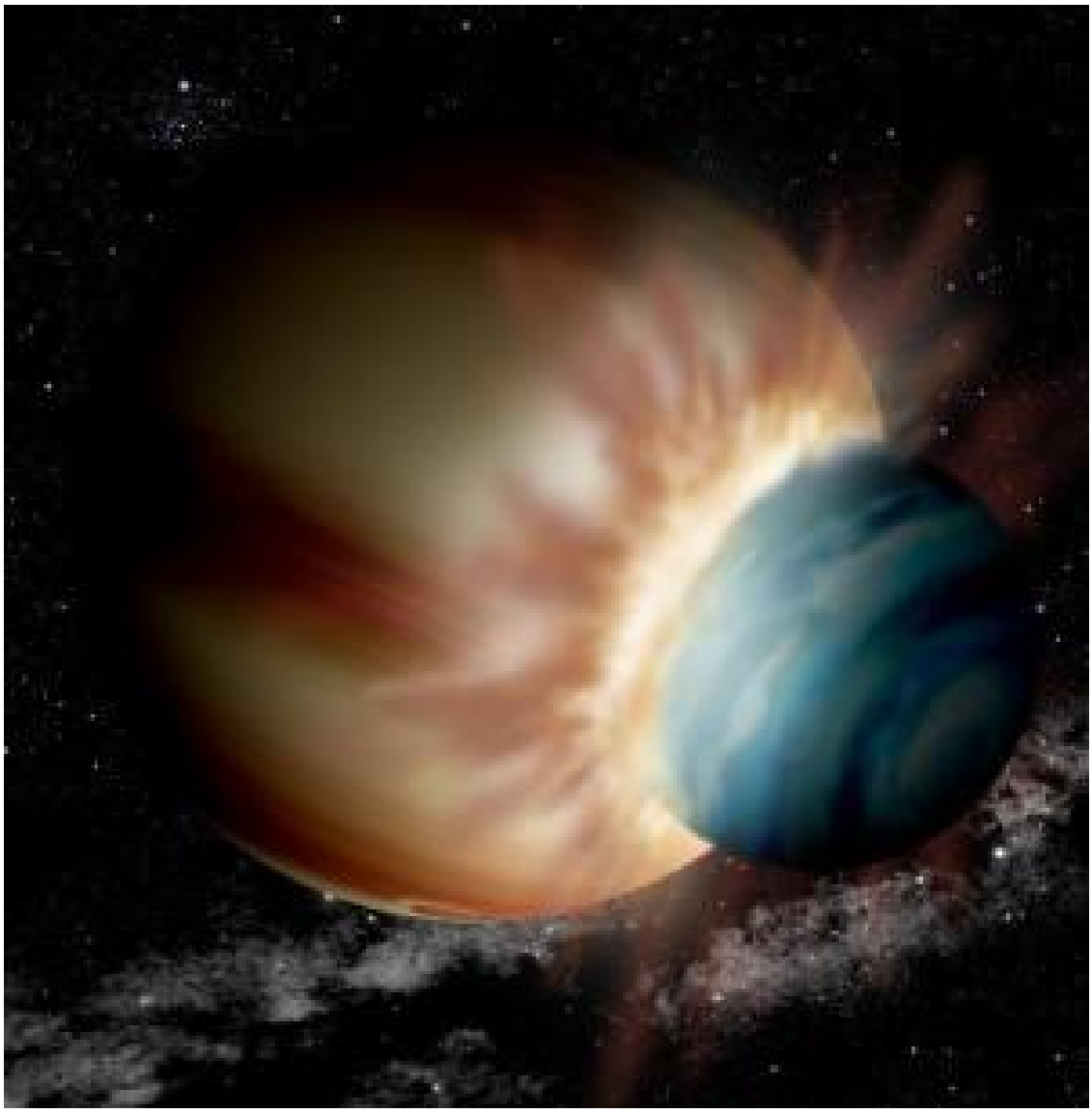
The researchers hope their new insights about how probiotics and gut microbes interact will ultimately enable the development of new probiotic therapies, which can be tailored for people with different conditions and different metabolic makeups.

Dr. Sunil Kochhar, another author on the study from the Nestlé Research Center, added: "Understanding changes in the molecular events triggered by the so-called beneficial bacteria in the host metabolism is an important prerequisite in our efforts to develop customized nutritional solutions to maintain and/or enhance our consumer's health and wellness at an individual level. The results of this study are highly promising to address personalized nutrition."

Adapted from materials provided by Imperial College London.

http://www.sciencedaily.com/releases/2008/01/080115085347.htm

When Worlds Collide: Have Astronomers Observed The Aftermath Of A Distant Planetary Collision?



Illustrated here in this artist's concept, astronomers may have observed the aftermath of a collision between two protoplanets, one Jupiter-sized and one Neptune-sized, in the system 2M1207. (Credit: David A. Aguilar (Harvard-Smithsonian CfA))

ScienceDaily (Jan. 16, 2008) — Astronomers have announced that a mystery object orbiting a star 170 light-years from Earth might have formed from the collision and merger of two protoplanets. The object, known as 2M1207B, has puzzled astronomers since its discovery because it seems to fall outside the spectrum of physical possibility. Its temperature, luminosity, age, and location do not match up with any theory.

"This is a strange enough object that it needs a strange explanation," said Eric Mamajek of the Harvard-Smithsonian Center for Astrophysics (CfA).

2M1207B orbits a 25-Jupiter-mass brown dwarf called 2M1207A seen in the direction of the constellation Centaurus. Computer models show that 2M1207A is very young, only about 8 million years old; therefore its companion should also be 8 million years old. At that age, it should have cooled to a temperature of less than 1300 degrees Fahrenheit (1000 Kelvin). However, observations show that

2M1207B is actually about 2400 degrees F (1600 K). The extra heat might be the result of a protoplanetary collision.

"Most, if not all, planets in our solar system were hit early in their history. A collision created Earth's moon and knocked Uranus on its side," explained Mamajek. "It's quite likely that major collisions happen in other young planetary systems, too."

Given its temperature, astronomers would expect a certain luminosity for 2M1207B, but it is 10 times fainter than expected. In 2006, astronomers suggested that it is obscured by a dusty, edge-on disk. Mamajek and his colleague, Michael Meyer of the University of Arizona, propose an alternative explanation: 2M1207B is small, only about the size of Saturn, and therefore has a smaller-than-expected surface area radiating energy. They derive a radius of 31,000 miles (50,000 km) for 2M1207B, compared to 37,000 miles (60,000 km) for Saturn. Given typical densities for giant planets, this would give 2M1207B a mass about 80 times Earth (or one-fourth Jupiter). The only plausible way for such a small object to be so hot millions of years after it formed is if it suffered a recent, titanic collision that heated it.

The planets in our solar system assembled from dust, rock, and gas, gradually growing larger over millions of years. But sometimes, two planet-sized objects collided catastrophically. For example, the Moon formed when an object about half the size of Mars hit the proto-Earth. If planet formation works the same way in other star systems, then 2M1207B might be the product of a collision between a Saturn-sized gas giant and a planet about three times the size of Earth. The two smacked into each other and stuck, forming one larger world still boiling from the heat generated in the collision.

"The Earth was hit by something one-tenth its mass, and it's likely that other planets in our solar system were too, including Venus and Uranus," explained Meyer. "If that one-tenth scale holds in other planetary systems, then we could be seeing the aftermath of a collision between a 72 Earth-mass gas giant and an 8 Earth-mass planet, even though such collisions are very unlikely." Mamajek also points out that the collision theory is reasonable from a timescale point of view. A 2400-degree, Saturn-sized object would radiate its heat away over about 100,000 years. If the system were billions of years old, it is unlikely that we would be looking at the right time, but since the system is young, the chances are much better that we would catch it shortly after the collision while the hot aftermath is still observable.

The collision hypothesis makes several predictions that astronomers can test. Chief among them is a low surface gravity (which depends on a planet's mass and radius). To check this prediction, astronomers will need to get a better spectrum of 2M1207B -- a challenge since it is very faint and very close to the brown dwarf 2M1207A. Others are checking the dusty disk theory by looking for signs of polarization in the light from 2M1207B. More answers should be forthcoming within a year or two.

Mamajek emphasized that while a planet collision may not be the correct explanation for the weirdness of 2M1207B, examples of colliding planets are likely to be found by the next generation of ground-based telescopes. "Hot, post-collision planets might be a whole new class of objects we will see with the Giant Magellan Telescope."

"Even if we're wrong, I wouldn't be surprised if someone finds a clear-cut case in the next 10 years," Mamajek added.

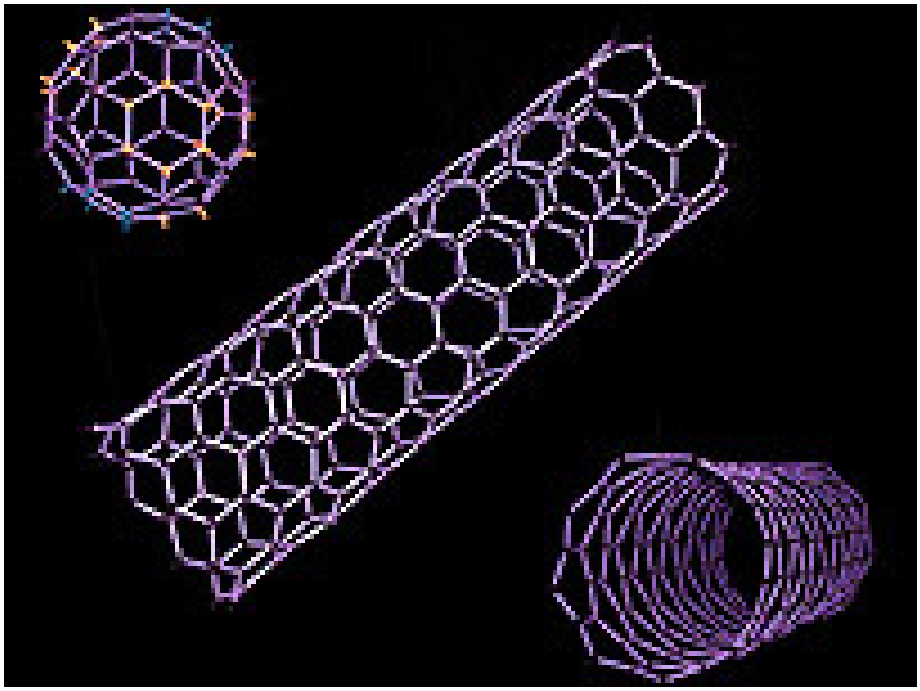
The announcement was made in a press conference at the 211th meeting of the American Astronomical Society.

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

http://www.sciencedaily.com/releases/2008/01/080112152249.htm

'Darkest ever' material created

By Helen Briggs
BBC News science reporter



The "darkest ever" substance known to science has been made in a US laboratory.

The material was created from carbon nanotubes - sheets of carbon just one atom thick rolled up into cylinders.

Researchers say it is the closest thing yet to the ideal black material, which absorbs light perfectly at all angles and over all wavelengths.

The discovery is expected to have applications in the fields of electronics and solar energy.

Theoretical clues

An ideal black object absorbs all the colours of light and reflects none of them. In theory, it should be possible to make something that approaches the "perfect absorber".

> **They've made the blackest material known to science**
> Prof Sir John Pendry

But it has proved difficult to construct an object that does not reflect light at all.

Researchers at Rensselaer Polytechnic Institute in Troy, New York, turned to carbon nanotubes - structures made from carbon, billionths of a metre across, that have unique properties.

Theory suggests that nanotubes might make a super black object, and experts are just starting to test these predictions.

A team led by Dr Pulickel Ajayan, who is presently at Rice University in Houston, Texas, built an array of vertically aligned, low-density carbon nanotubes. Dr Shawn Lin measured the optical properties.

The roughness of the material's surface was tuned to minimise its optical reflectance.

BUCKYBALLS AND NANOTUBES
Closed cages of carbon atoms
Appear as spheres and tubes
Electrical properties tuneable
Could form tiny circuit wires
Tubes make strong materials
Buckyballs will block HIV virus

Experiments showed that this "forest" of carbon nanotubes was very good at absorbing light, and very poor at reflecting it.

Reporting their findings in the journal Nano Letters, Dr Ajayan, Dr Lin and colleagues say the reflectance of the material is three times lower than previously achieved.

This makes it the "darkest man-made material ever".

"The periodic nanotube structures make an ideal candidate for creating superdark materials, because it allows one to tailor light absorption by controlling the dimensions and periodicities of nanotubes in the structure," said Dr Ajayan.

Commenting on the study, Professor Sir John Pendry, who first predicted that such a discovery might be possible, said the results were promising.

"They've made the blackest material known to science," the theoretical physicist from Imperial College, London, told BBC News.

"The application will be to things like more efficient solar cells, more efficient solar panels and any application where you need to harvest light," he added.

SOME POTENTIAL USES OF NANOTECHNOLOGIES
1 - Organic Light Emitting Diodes (OLEDs) for displays
2 - Photovoltaic film that converts light into electricity
3 - Scratch-proof coated windows that clean themselves with UV
4 - Fabrics coated to resist stains and control temperature
5 - Intelligent clothing measures pulse and respiration
6 - Bucky-tubeframe is light but very strong
7 - Hip-joint made from biocompatible materials
8 - Nano-particle paint to prevent corrosion
9 - Thermo-chromic glass to regulate light
10 - Magnetic layers for compact data memory
11 - Carbon nanotube fuel cells to power electronics and vehicles
12 - Nano-engineered cochlear implant

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/1/hi/sci/tech/7190107.stm

Published: 2008/01/16 17:56:11 GMT

Giant palm tree puzzles botanists

Jonny Hogg
BBC News, Antananarivo

Botanists have discovered a new species of giant self-destructing palm in Madagascar which is so large that it can be seen in satellite photos.

The tree, which only exists in the remote north-west of the island, is unlike anything else ever found on the island before.

Although villagers had known about it for many years none had seen it flower.

When this finally happened last year, botanists found that the tree spent so much energy flowering that it died.

'Spectacular'

The palm is 20m (60ft) high with leaves 5m (16ft) long, the tallest tree of its type in the country, but for most of its life - around 100 years - it appears fairly unremarkable apart from its size.

It was only when botanists from Kew Gardens in London were told of its extraordinary flowering pattern that they began to be interested.

"It's spectacular," says Mijoro Rakotoarinivo, who works with Kew and has seen the tree.

"At first there's only a very long shoot like asparagus from the top of the tree and then, a few weeks later, this unique shoot starts to spread.

"At the end of this process you can have something like a Christmas tree."

'To be protected'

The branches then become covered with hundreds of tiny flowers, which are pollinated and turn into fruit.

But the tree expends so much energy on flowering that it eventually collapses and dies.

The tree has been named *Tahina spectabilis* , which is Malagasy for "blessed" or "to be protected". It is also one of the given names of Anne-Tahina Metz, the daughter of Xavier Metz, who discovered the palm two years ago.

Scientists have identified 92 individual trees, all confined to the same remote area.

Dr John Dransfield, who announced the name of the tree in the Botanical Journal of the Linnean Society, is baffled as to how the it came to be in the country.

It bears a resemblance to a species of palm found in regions of Asia; 6,000km away.

It is possible that the palm has quietly gone through a remarkable evolution since Madagascar split with India some 80m years ago.

It is now hoped that the plant will be conserved and that selling seeds can generate revenue for people living nearby, as well as allowing gardeners across the world to own their very own self-destructing Malagasy palm tree.

Madagascar is home to more than 10,000 plant species, 90% of which occur nowhere else in the world. These include 170 known species of palm.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/1/hi/sci/tech/7193161.stm

Published: 2008/01/17 03:24:23 GMT

Poor diets 'kill 3.5m children'
A third of child deaths globally are caused by poor nutrition, experts warn.

Around 3.5 million children die every year because of lack of food or poor quality food, a problem which starts in the womb, studies show.

Yet 25% of these deaths could be prevented with simple steps such as breastfeeding and vitamin A supplements, the Lancet reports.

The majority of undernourished children and pregnant women live in just 20 countries across Africa and Asia.

A special series in The Lancet also reported that poor nutrition in infancy leads to irreversible damage in later life.

> **Having an undernourished mother or infant causes irreversible damage even if nutrition improves later in childhood**
> Professor Caroline Fall, University of Southampton

Children who are under-nourished are likely to have shorter height and do less well at school, reducing their economic potential and perpetuating the poverty cycle, analysis found.

A separate study found "convincing evidence" for several measures which could have a big impact on reducing deaths if implemented properly.

Zinc and vitamin A supplements as well as encouraging women to breastfeed for at least six months would cut deaths and the loss of years through disability by a quarter, the researchers concluded.

But the international response to child deaths from poor nutrition has been "fragmented and dysfunctional", experts warned.

Global burden

Some children die because they simply do not have enough food.

But the issue is more complex for other children who suffer stunted growth and illnesses associated with deficiencies of vital vitamins and minerals.

The problem can be exacerbated by poor sanitation which spreads infectious diseases that cause diarrhoea.

Professor Zulfiqar Bhutta, Department of Paediatrics and Child Health at Aga Khan University in Pakistan estimated that 1.4 million child deaths annually are caused by a lack of breastfeeding.

In Africa, Asia, Latin America and the Caribbean less than a third of children under the age of six months are breastfed exclusively, he said.

Professor Caroline Fall, from the University of Southampton, who carried out the research into long-term effects of poor nutrition said: "Having an undernourished mother or infant causes irreversible damage even if nutrition improves later in childhood - you don't get the chance to recover much".

Dr Bruce Cogill, a nutrition expert at Unicef, said the global burden caused by under-nutrition was "a call to action".

He added that nutrition programmes were "woefully under-resourced" compared to other global health issues, such as Aids.

Professor Simon Cousens, from the London School of Hygiene and Tropical Medicine said the period from conception until 24 months of age was most crucial.

"Countries with a high prevalence of under-nutrition must decide which interventions should be given the highest priority, and ensure their active implementation."

Save the Children said if trends in Africa continued, 3.7 million more children will be suffering from malnutrition in 2015 than today.

David Mepham, director of policy at the charity said: "Children who are malnourished suffer cognitive impairment, affecting their capacity to learn, and they have much weaker immune systems, making them more vulnerable to disease and early death."

He called for the UK and EU governments to do more to tackle the problem.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/1/hi/health/7192004.stm

Published: 2008/01/17 01:39:05 GMT

In Praise of Melancholy

American culture's overemphasis on happiness misses an essential

By ERIC G. WILSON

Ours are ominous times. We are on the verge of eroding away our ozone layer. Within decades we could face major oceanic flooding. We are close to annihilating hundreds of exquisite animal species. Soon our forests will be as bland as pavement. Moreover, we now find ourselves on the verge of a new cold war.

But there is another threat, perhaps as dangerous: We are eradicating a major cultural force, the muse behind much art and poetry and music. We are annihilating melancholia.

A recent poll conducted by the Pew Research Center shows that almost 85 percent of Americans believe that they are very happy or at least pretty happy. The psychological world is now abuzz with a new field, positive psychology, devoted to finding ways to enhance happiness through pleasure, engagement, and meaning. Psychologists practicing this brand of therapy are leaders in a novel science, the science of happiness. Mainstream publishers are learning from the self-help industry and printing thousands of books on how to be happy. Doctors offer a wide array of drugs that might eradicate depression forever. It seems truly an age of almost perfect contentment, a brave new world of persistent good fortune, joy without trouble, felicity with no penalty.

Why are most Americans so utterly willing to have an essential part of their hearts sliced away and discarded like so much waste? What are we to make of this American obsession with happiness, an obsession that could well lead to a sudden extinction of the creative impulse, that could result in an extermination as horrible as those foreshadowed by global warming and environmental crisis and nuclear proliferation? What drives this rage for complacency, this desperate contentment?

Surely all this happiness can't be for real. How can so many people be happy in the midst of all the problems that beset our globe — not only the collective and apocalyptic ills but also those particular irritations that bedevil our everyday existences, those money issues and marital spats, those stifling vocations and lonely dawns? Are we to believe that four out of every five Americans can be content amid the general woe? Are some people lying, or are they simply afraid to be honest in a culture in which the status quo is nothing short of manic bliss? Aren't we suspicious of this statistic? Aren't we further troubled by our culture's overemphasis on happiness? Don't we fear that this rabid focus on exuberance leads to half-lives, to bland existences, to wastelands of mechanistic behavior?

I for one am afraid that American culture's overemphasis on happiness at the expense of sadness might be dangerous, a wanton forgetting of an essential part of a full life. I further am concerned that to desire only happiness in a world undoubtedly tragic is to become inauthentic, to settle for unrealistic abstractions that ignore concrete situations. I am finally fearful of our society's efforts to expunge melancholia. Without the agitations of the soul, would all of our magnificently yearning towers topple? Would our heart-torn symphonies cease?

My fears grow out of my suspicion that the predominant form of American happiness breeds blandness. This kind of happiness appears to disregard the value of sadness. This brand of supposed joy, moreover, seems to foster an ignorance of life's enduring and vital polarity between agony and ecstasy, dejection and ebullience. Trying to forget sadness and its integral place in the great rhythm of the cosmos, this sort of happiness insinuates that the blues are an aberrant state that should be cursed as weakness of will or removed with the help of a little pink pill.

I'm not questioning joy in general. For instance, I'm not challenging that unbearable exuberance that suddenly emerges from long suffering. I'm not troubled by that hard-earned tranquillity that comes

from long meditation on the world's sorrows. I'm not criticizing that slow-burning bliss that issues from a life spent helping those who hurt. And I'm not romanticizing clinical depression. I realize that there are many lost souls out there who require medication to keep from killing themselves or harming their friends and families. I'm not questioning pharmaceutical therapies for the seriously depressed or simply to make existence bearable for so many with biochemical disorders.

I do, however, wonder why so many people experiencing melancholia are now taking pills simply to ease the pain. Of course there is a fine line between what I'm calling melancholia and what society calls depression. In my mind, what separates the two is degree of activity. Both forms are more or less chronic sadness that leads to continuing unease with how things are — persistent feelings that the world is not quite right, that it is a place of suffering, stupidity, and evil. Depression (as I see it, at least) causes apathy in the face of this unease, lethargy approaching total paralysis, an inability to feel much of anything one way or another. In contrast, melancholia generates a deep feeling in regard to this same anxiety, a turbulence of heart that results in an active questioning of the status quo, a perpetual longing to create new ways of being and seeing.

Our culture seems to confuse these two and thus treats melancholia as an aberrant state, a vile threat to our pervasive notions of happiness — happiness as immediate gratification, happiness as superficial comfort, happiness as static contentment. Of course the question immediately arises: Who wouldn't question this apparently hollow form of American happiness? Aren't all of us late at night, when we're honest with ourselves, opposed to shallow happiness? Most likely we are, but isn't it possible that many of us fall into superficiality without knowing it? Aren't some of us so smitten with the American dream that we have become brainwashed into believing that our sole purpose on this earth is to be happy? Doesn't this unwitting affection for happiness over sadness lead us to a one-sided life, to bliss without discomfort, bright noon with no night?

My sense is that most of us have been duped by the American craze for happiness. We might think that we're leading a truly honest existence, when we're really just behaving as predictably and artificially as robots, falling easily into well-worn "happy" behaviors, into the conventions of contentment. Deceived, we miss out on the great interplay of the living cosmos, its luminous gloom, its terrible beauty.

The American dream of happiness might be a nightmare. What passes for bliss could well be a dystopia of flaccid grins. Our passion for felicity hints at an ominous hatred for all that grows and thrives and then dies. I'd hate for us to awaken one morning and regret what we've done in the name of untroubled enjoyment. I'd hate for us to crawl out of our beds and walk out into a country denuded of gorgeous lonely roads and the grandeur of desolate hotels, of half-cracked geniuses and their frantic poems. I'd hate for us to come to consciousness when it's too late to live.

On November 30, 1820, as the autumn orange decayed into earth's winter muck, John Keats, suffering from the tuberculosis that killed his mother and his brother Tom, sat down to draft a letter to his good friend Charles Brown. This was to be his last known correspondence. Between horrific bouts of coughing — coughing that stained his tongue with blood — Keats wrote these striking lines: "I have an habitual feeling of my real life having past, and that I am leading a posthumous existence." At the age of 25, when he should have been relishing opportunities for love and for growth, for summer's larks and pretty girls, Keats already felt like a corpse. It seemed to him as though he were already in the grave and therefore looking back on his days as one would witness a character in a finished story. There he was, composing, viewing the world with a dead man's eyes.

When he was only nine years old, his father fell from his horse and died the next day. A few years later, his mother was diagnosed with tuberculosis. Though Keats nursed her assiduously, sitting up with her all hours of the night, cooking for her, reading to her, she died in 1810, during Keats's 15th year. Keats was assigned to a guardian and soon after taken from a beloved boarding school and required to apprentice as an apothecary. He found the work tedious, for during these years, his late teens, he was awakening to the grandeurs of poetry, especially the verse of Spenser and Shakespeare. To complete his training, Keats had to learn surgery. Day after day, he toiled in a hospital, malodorous and bloody, where he witnessed nothing but suffering. As he was turning from surgery to poetry, his

first substantial poem, "Endymion," was published in 1818. Two of the leading literary magazines of the time attacked the poem for not making sense.

Around this time, Keats's brother Tom died after a long and painful illness. While attending Tom, Keats met the love of his life, Fanny Brawne, and became engaged to her. However, he soon realized that he would never be able to marry her because he himself was doomed to fall prey to the same disease that killed his family members. He knew he would die without ever consummating his ardent love.

One would think that Keats's life would have fostered bitterness in him, but he remained generous in the face of his difficulties. He didn't flee to the usual 19th-century escapes: Christianity or opium, drink or dreaming. Though he unsurprisingly underwent pangs of serious melancholia (who wouldn't, faced with his disasters?), he nonetheless never fell into self-pity or self-indulgent sorrow. In fact, he consistently transformed his gloom, grown primarily from his experiences with death, into a vital source of beauty. Things are gorgeous, he often claimed, because they die. The porcelain rose is not as pretty as the one that decays. Melancholia over time's passing is the proper stance for beholding beauty.

Keats understood that suffering and death are not aberrations to be cursed but necessary parts of a capacious existence, a personal history attuned to the plentiful polarity of the cosmos. To deny death and calamity would be to live only a partial life, one devoid of creativity and beauty. Keats welcomed his death so that he could live.

Taking this double stance — suffering death while transcending death — Keats was in his pain and yet above it. He developed this interplay between detachment and attachment in one of his most famous letters, written in 1819. "Do you not see how necessary a World of Pains and troubles is to school an Intelligence and make it a Soul?" he asked. He's here implying that an abstract mind can develop into a full-hearted person only through enduring long periods of sadness and pain.

In another famous letter, this one from 1818, Keats compares a human's life with a "large Mansion of Many Apartments." He states that the only way to engage the great mysteries of life is to suffer "Misery and Heartbreak, Pain, Sickness and oppression." Undergoing these troubles, one moves from the "Chamber of Maiden Thought," the room of innocence, into darker passages, the regions of profound experience. In this latter place, one finds the inspiration for poetry, poetry that explores the mysterious burdens of life. In this case, too, Keats shows himself to be intensely aware of the painful world but also keenly willing to embrace this same pain. It's as if he were somehow in the world but not of it, able to suffer sadness but also able to see beyond it.

In his 1819 "Ode on Melancholy," he urges us not to alleviate our blues with befuddling chemicals, seek escape through suicide, or "drown the wakeful anguish of the soul." Remaining conscious of our dark moods, we might fall into a "melancholy fit," a deep experience of life's transience but also of its beauty. This melancholy fit is a mixed affair. It falls from heaven "like a weeping cloud,/That fosters the droop-headed flowers all." But it also brings rain and nourishment. Indeed, this cloud "hides the green hill in an April shroud."

What can we call this fit but a meaningful experience of generative melancholy, of that strange feeling that sadness connects us to life's vibrant pulses? Alienated from home and happiness, we sense what is most essential: not comfort or contentment but authentic participation in life's grim interplay between stinking corpses and singing lemurs. This "fit" shivers our souls.

In this tense mood, we are in a position to understand the relationship between beauty and death. Keats urges us to "glut" our sorrow on a "morning rose" or "on the rainbow of the salt sand-wave" or "on the wealth of globèd peonies." He then says that if our "mistress" shows "rich anger," we should take her hand and let her "rave" and "feed deep, deep upon her peerless eyes." Each of those recommendations features the melancholy soul's experiencing something beautiful but also something transient. There is a connection among melancholy, beauty, and death.

These associations make for several conclusions. The "wakeful anguish" of sharp melancholia can lead to a shuddering experience, a "fit." This vital moment grows from an insight into the nature of things: Life grows from death; death gives rise to life. This insight animates melancholy, makes it vibrant. But it also intensifies the pain, for it emphasizes this: Everything, no matter how beautiful, must die. Rather than flee from this difficult position, the melancholic appreciates things all the more because they die. In enjoying the beauty of the world, the melancholic himself wants to create beauty, to commemorate his resplendent experience of earth's transient gorgeousness.

Melancholia, far from a mere disease or weakness of will, is an almost miraculous invitation to transcend the banal status quo and imagine the untapped possibilities for existence. Without melancholia, the earth would likely freeze over into a fixed state, as predictable as metal. Only with the help of constant sorrow can this dying world be changed, enlivened, pushed to the new.

These are not metaphysical claims, not some New Age claptrap. On the contrary, these statements are attuned to the sloppy world as it simply appears to us in our everyday experience. When we, with apparent happiness, grab hard onto one ideology or another, this world suddenly seems to take on a static coherence, a rigid division between right and wrong. The world in this way becomes uninteresting, dead. But when we allow our melancholy mood to bloom in our hearts, this universe, formerly inanimate, comes suddenly to life. Finite rules dissolve before infinite possibilities. Happiness to us is no longer viable. We want something more: joy. Melancholia galvanizes us, shocks us to life.

Melancholia pushes against the easy "either/or" of the status quo. It thrives in unexplored middle ground between oppositions, in the "both/and." It fosters fresh insights into relationships between oppositions, especially that great polarity life and death. It encourages new ways of conceiving and naming the mysterious connections between antinomies. It returns us to innocence, to the ability to play in the potential without being constrained to the actual. Such respites from causality refresh our relationship to the world, grant us beautiful vistas, energize our hearts and our minds.

Indeed, the world is much of the time boring, controlled as it is by staid habits. It seems overly familiar, tired, repetitious. Then along comes what Keats calls the melancholy fit, and suddenly the planet again turns interesting. The veil of familiarity falls away. There before us shimmer bracing possibilities. We are called to forge untested links to our environments. We are summoned to be creative.

Given these virtues of melancholia, why are psychiatrists and psychologists attempting to "cure" depression as if it were a terrible disease? Obviously, those suffering severe depression — suicidal and bordering on psychosis — require serious medications. But what of those who possess mild to moderate depression? Should these potential visionaries and innovators eradicate their melancholia with the help of a pill?

Right now, if the statistics are correct, about 15 percent of Americans are not happy. Soon, perhaps, with the help of psychopharmaceuticals, melancholics will become unknown. That would be an unparalleled tragedy, equivalent in scope to the annihilation of the sperm whale or the golden eagle. With no more melancholics, we would live in a world in which everyone simply accepted the status quo, in which everyone would simply be content with the given. This would constitute a nightmare worthy of Philip K. Dick, a police state of Pollyannas, a flatland that offers nothing new under the sun. Why are we pushing toward such a hellish condition?

The answer is simple: fear. Most hide behind a smile because they are afraid of facing the world's complexity, its vagueness, its terrible beauties. If we stay safely ensconced behind our painted grins, then we won't have to encounter the insecurities attendant upon dwelling in possibility, those anxious moments when one doesn't know this from that, when one could suddenly become almost anything at all. Even though this anxiety, usually over death, is in the end exhilarating, a call to be creative, it is in the beginning rather horrifying, a feeling of hovering in an unpredictable abyss. Most of us habitually flee from that state of mind, try to lose ourselves in distraction and good cheer. We don inauthenticity as a mask, a disguise to protect us from the abyss.

To foster a society of total happiness is to concoct a culture of fear. Do we really want to give away our courage for mere mirth? Are we ready to relinquish our most essential hearts for a good night's sleep, a season of contentment? We must resist the seductions of mindless happiness and somehow hold to our sadness. We must find a way, difficult though it is, to be who we are, sullenness and all.

Suffering the gloom, inevitable as breath, we must further accept this fact that the world hates: We are forever incomplete, fragments of some ungraspable whole. Our unfinished natures — we are never pure actualities but always vague potentials — make life a constant struggle, a bout with the persistent unknown. But this extension into the abyss is also our salvation. To be only a fragment is always to strive for something beyond ourselves, something transcendent. That striving is always an act of freedom, of choosing one road instead of another. Though this labor is arduous — it requires constant attention to our mysterious and shifting interiors — it is also ecstatic, an almost infinite sounding of the exquisite riddles of Being.

To be against happiness is to embrace ecstasy. Incompleteness is a call to life. Fragmentation is freedom. The exhilaration of never knowing anything fully is that you can perpetually imagine sublimities beyond reason. On the margins of the known is the agile edge of existence. This is the rapture, burning slow, of finishing a book that can never be completed, a flawed and conflicted text, vexed as twilight.

Eric G. Wilson is a professor of English at Wake Forest University. This essay is adapted from his book Against Happiness: In Praise of Melancholy, *being published this month by Farrar, Straus and Giroux.*

ODE ON MELANCHOLY

NO, no! go not to Lethe, neither twist
Wolf's-bane, tight-rooted, for its poisonous wine;
Nor suffer thy pale forehead to be kist
By nightshade, ruby grape of Proserpine;
Make not your rosary of yew-berries,
Nor let the beetle, nor the death-moth be
Your mournful Psyche, nor the downy owl
A partner in your sorrow's mysteries;
For shade to shade will come too drowsily,
And drown the wakeful anguish of the soul.

But when the melancholy fit shall fall
Sudden from heaven like a weeping cloud,
That fosters the droop-headed flowers all,
And hides the green hill in an April shroud;
Then glut thy sorrow on a morning rose,
Or on the rainbow of the salt sand-wave,
Or on the wealth of globèd peonies;
Or if thy mistress some rich anger shows,
Emprison her soft hand, and let her rave,
And feed deep, deep upon her peerless eyes.

She dwells with Beauty — Beauty that must die;
And Joy, whose hand is ever at his lips
Bidding adieu; and aching Pleasure nigh,
Turning to poison while the bee-mouth sips:
Ay, in the very temple of Delight
Veil'd Melancholy has her sovran shrine,
Though seen of none save him whose strenuous tongue
Can burst Joy's grape against his palate fine;

His soul shall taste the sadness of her might,
And be among her cloudy trophies hung.

— John Keats (*The Oxford Book of English Verse: 1250-1900,* 1919 edition)

BORN TO THE BLUES

American happiness is a temptation, one to which I've succumbed on several occasions. More than once I've grown weary of the pervasive gloom of my soul. Like millions of other Americans, I have tried to flee the sadness, attempted to escape, by any means possible, the weight, the fatigue, the fret. Let's be serious: Life, in any form, is terribly and irredeemably hard. Why shouldn't we all scurry from the heartache in the most superficial ways possible, through BlackBerrys and Lexapro and liposuction? Why shouldn't we bask in the gaudy glow of the pervasive American dream? What's lost in this collective stupor? What's wrong, finally, with wanting nothing but bliss?

At the behest of well-meaning friends, I have purchased books on how to be happy. I have tried to turn my chronic scowl into a bright smile. I have attempted to become more active, to get out of my dark house and away from my somber books and participate in the world of meaningful action. I have taken up jogging, the Latin language, and the chair of a university English department. I have fostered the drive to succeed in my career. I have bought an insurance policy, a PalmPilot, and a cellphone. I have taken an interest in Thanksgiving and Christmas, in keeping my hair trimmed short, and in meticulously ironing my clothes. I have viewed Doris Day and Frank Capra movies. I have feigned interest in the health of others. I have dropped into the habit of saying "great" and "wonderful" as much as possible. I have pretended to take seriously certain good causes designed to make the world a better place. I have contemplated getting a dog. I have started eating salads. I have tried to discipline myself in nodding knowingly. I have tried to be mindful of others but ended up pissed as hell. I have written a book on the hard-earned optimism of Ralph Waldo Emerson. I have undertaken yoga. I have stopped yoga and gone into tai chi. I have thought of going to psychiatrists and getting some drugs. I have quit all of this and then started again and then once more quit. Now I plan to stay quit. The road to hell is paved with happy plans.

My basic instinct is toward melancholia — a state I must nourish. In fostering my essential nature, I'm trying to live according to what I see as my deep calling. Granted, it's difficult at times to hold hard to this vocation, this labor in the fields of sadness. But I realize somewhere in the core of my bones that I was born to the blues.

From *Against Happiness*

http://chronicle.com
Section: The Chronicle Review
Volume 54, Issue 19, Page B11

http://chronicle.com:80/temp/reprint.php?id=t5wqrs9hpxt70zjz3bv348pqg1hcxz0r

Older dancers can be a revelation

Some dancers continue to give eloquent performances even in their 90s. And the depth of their knowledge is invaluable

All Judith Mackrell articles

January 15, 2008 4:00 PM

John Lowe is a spring chicken compared to some. Photograph: PA/Chris Radburn

One of the sweetest news stories in the papers this week was about the 88-year-old Cambridge pensioner who, having taken up dancing at 79, has just made his stage debut in a regional production of the Prokofiev ballet The Stone Flower. John Lowe has spoken proudly of a daily routine that involves using ropes to improve the height of his battements and arabesques. However, as a report in the Telegraph points out, Lowe is a babe compared to Liverpool-born Frederic Franklin who at 93 is still going strong. Having danced with some of the world's leading companies since the 1930s, Franklin embodies a precious link with the past. He is in huge demand as a teacher and he continues to perform character roles - most recently Friar Laurence in American Ballet Theatre's Romeo and Juliet. "They keep saying, 'Come on, Fred, get out there'," he says - and he is happy to oblige.

Impressive as Franklin is, he's not unique. Classical ballet may idealise a very youthful type of body beautiful but it can't do without age and experience. Within the studio it's the older members of the profession like Franklin who have the longest memories in the teaching of repertory and technique. And they're a necessity on stage too. Most story ballets in the repertory feature characters of all ages: Friar Laurence never looks convincing when played by a fresh-faced 20-year-old who'd obviously prefer to be dancing Romeo. These veterans may suffer from stiffer joints but it can be a revelation seeing how they command the stage, with years of training distilled in their gestures and their timing.

Modern dance has also developed space for the oldies. When first generation radicals like Merce Cunningham and Martha Graham entered middle age they found they had no wish to stop performing and adapted their material instead. Perhaps Graham counts as a scary example, given her increasingly bizarre attempts to cling on to her youth, but Cunningham's entire ethos was about expanding the language of dance and he taught audiences to see that his body contained its own special eloquence even within its increasingly arthritic limits.

Japanese butoh veteran Kazuo Ohno, who performed up to his late 90s, is probably the most extreme example of professional longevity, but Pina Bausch aged 67 is shortly to reprise her role in Cafe Müller in London. And British company From Here to Maturity successfully showcases dancers ranging from their mid-50s to late-70s.

Older dancers will always remain a minority. Most retire from the profession around the age of 40 either because it's too physically painful to continue or because the work has dried up. But it's neither dogged political correctness nor sentimentality that makes us welcome those who remain. If dance is about maximising the body's powers to communicate, these veterans should have their say.

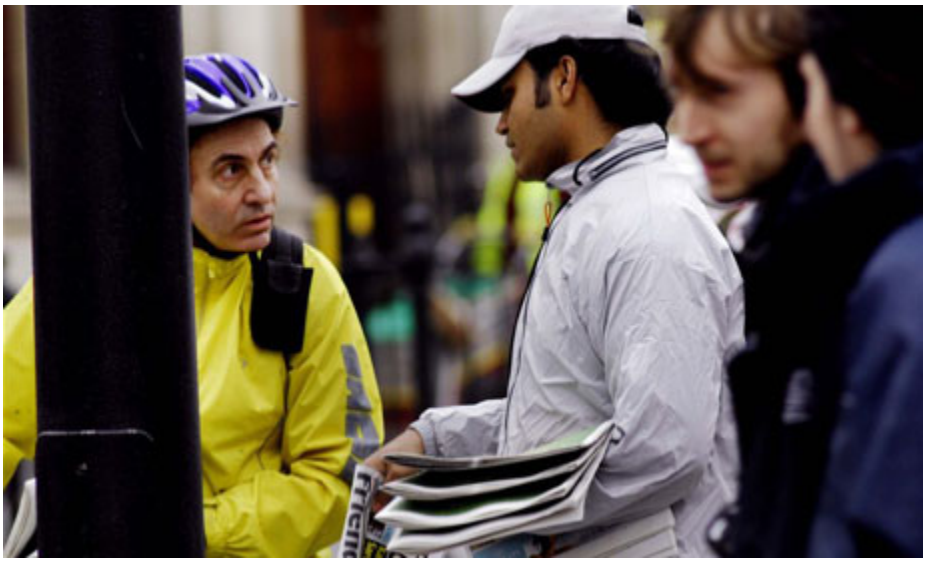
http://blogs.guardian.co.uk:80/theatre/2008/01/one_of_the_sweetest_news.html

No good for nothing: the attack of the crapsheets

Nicholas Lezard

January 16, 2008 3:05 PM

http://blogs.guardian.co.uk/books/2008/01/no_good_for_nothing_the_attack.html



You *should* look scared ... A man hands out copies of London Lite. Photograph: Sarah Lee

Londoners know the drill all too well now: the hurrying of the pace, the averted gaze, the quick, deft feint at the last minute; all to avoid the outstretched arm of the free paper man.

I remember when they first started giving out these crapsheets (the correct term). They were regarded as an imposition, and people looked on them with scorn. To be caught reading one was to invite speculation that you were possibly a cretin. But the crapsheets persisted and persisted, and eventually the hassled commuter gave in. You have to have something to read on the tube, after all.

But why must it be a crapsheet? I mean, *look* at them. They're appalling. This is even before you begin to read them. Hideous design, copy indistinguishable from ads, ads insdistinguishable from dog vomit, headlines blaring hysterically about sod-all all over the shop.

And as for the copy - well, the question is not so much "who reads this shit?" as "who writes this shit?" Were I one of their writers, having to pull out 300 words every day on Amy Winehouse's gastro-intestinal tract, I think I'd kill myself. I would not be surprised if there is an anomalously huge suicide rate among the people who fill up the crapsheet pages with their garbage.

But the real effect is the most toxic: that on the reading habits of the capital. I was on the tube last night, and I was THE ONLY PERSON not frowning over a crapsheet. I had a book. Perhaps it's different elsewhere? I hope so, but I only have experience of this city.

Don't even think of calling me a snob. The Guardian can trace your computer. We know where you live. You'd be wrong anyway, for this reason: I can remember a time when people read books on the tube. True, around the release of certain films these tend to be written by Rowling or Tolkien - but you could still see people reading real books, filling their heads.

To see someone with supermodel looks reading a Penguin classic, as I once did, is to fall in love. To see someone with an unidentified book is to be tantalisingly aware of the unknowable mystery of another's mind. I have often nearly fallen over during surreptitious cranings of the neck to see what the title is of the intriguing-looking book being held by that intriguing-looking young man. I once saw someone reading a book I had recently reviewed and came that close to introducing myself.

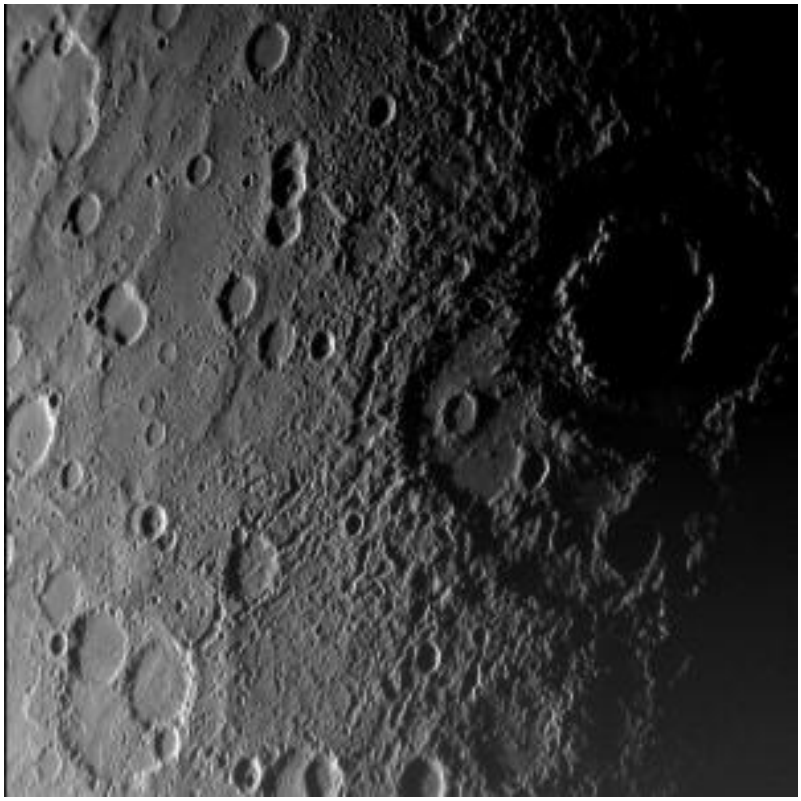
Public transport is a place to escape from. Not only are you stuck in it, you are most likely travelling either to or from somewhere you don't want to be. And no better legal or healthy escape route from the world has been devised than the good book. The crapsheet, though, just takes the world, puts it through a crazy-colour blender, removes all the nutrients, and then spews it back in your face. And to think that the zombies reading them probably go around saying "I'd love to read, but I just don't have the *time*."

Give these people their time back. Carry a stout stick and the next time you see the crapsheet dealer, thrash him within an inch of his life. It is not as if it is a dignified or rewarding job. Go to their head offices and burn them down. Drive their wailing journalists into the Thames.

And for Christ's sake, get everyone reading books on the tube again. I don't care which ones. Anything, for crying out loud.

http://blogs.guardian.co.uk/books/2008/01/no_good_for_nothing_the_attack.html

MESSENGER Reveals Mercury In New Detail



This MESSENGER image was taken from a distance of about18,000 kilometers (11,000 miles), about 56 minutes before the spacecraft's closest encounter with Mercury. It shows a region roughly 500 kilometers (300 miles) across, and craters as small as 1 kilometer (0.6 mile) can be seen in this image. (Credit: NASA/Johns Hopkins University Applied Physics Laboratory/Carnegie Institution of Washington)

ScienceDaily (Jan. 17, 2008) — As MESSENGER approached Mercury on January 14, 2008, the spacecraft's Narrow-Angle Camera on the Mercury Dual Imaging System (MDIS) instrument captured this view of the planet's rugged, cratered landscape illuminated obliquely by the Sun.

The large, shadow-filled, double ringed crater to the upper right was glimpsed by Mariner 10 more than three decades ago and named Vivaldi, after the Italian composer.

Its outer ring has a diameter of about 200 kilometers (about 125 miles). MESSENGER's modern camera has revealed detail that was not well seen by Mariner 10, including the broad ancient depression overlapped by the lower-left part of the Vivaldi crater.

The MESSENGER science team is in the process of evaluating later images snapped from even closer range showing features on the side of Mercury never seen by Mariner 10. It is already clear that MESSENGER's superior camera will tell us much that could not be resolved even on the side of Mercury viewed by Mariner's vidicon camera in the mid-1970s.

This MESSENGER image was taken from a distance of about18,000 kilometers (11,000 miles), about 56 minutes before the spacecraft's closest encounter with Mercury. It shows a region roughly 500 kilometers (300 miles) across, and craters as small as 1 kilometer (0.6 mile) can be seen in this image.

Adapted from materials provided by Johns Hopkins University.

http://www.sciencedaily.com/releases/2008/01/080116174044.htm

Portable Device Quickly Detects Early Alzheimer's

The DETECT system includes an LCD display in a visor with an onboard dedicated computer, noise reduction headphones and an input device (controller). The display projects the visual aspect of the test and the headphones provide the verbal instructions. (Credit: Image courtesy of Georgia Institute of Technology)

ScienceDaily (Jan. 17, 2008) — The latest medications can delay the onset of Alzheimer's disease, but none are able to reverse its devastating effects. This limitation often makes early detection the key to Alzheimer's patients maintaining a good quality of life for as long as possible.

Now, a new device developed by the Georgia Institute of Technology and Emory University may allow patients to take a brief, inexpensive test that could be administered as part of a routine yearly checkup at a doctor's office to detect mild cognitive impairment (MCI) — often the earliest stage of Alzheimer's. The device is expected to be commercialized later this year.

Current assessment tests capable of detecting early Alzheimer's typically are taken with a pen and paper or at a computer terminal and last about an hour and a half. They must be given by a trained technician in a quiet environment, because any distractions can influence the patient's score and reduce the test's effectiveness. Because of their length and expense, the tests are not used as regular screening tools and typically are given only after there is obvious cognitive impairment such as forgetfulness or unsafe behavior.

"Families usually wait until their mom or dad does something somewhat dangerous, like forgetting to take their medications or getting lost, before bringing them in for testing. At that point, the patient has already lost a significant portion of their cognitive function," said David Wright, MD, who helped develop the device. Wright is assistant professor of emergency medicine at Emory University School of Medicine and co-director of the Emory Emergency Medicine Research Center. "With this device, we might be able to pick up impairment well before those serious symptoms occur and start patients on medications that could delay those symptoms."

The Georgia Tech and Emory device, called DETECT, gives individuals a roughly ten-minute test designed to gauge reaction time and memory — functions that, when impaired, are associated with the

earliest stages of Alzheimer's disease. The test is a specially modified, shortened version of the traditional pen and paper test and could be given repeatedly by doctors to evaluate any changes in cognitive functions.

"We really envision this to be part of the normal preventative care a patient receives from a general practitioner," said Michelle LaPlaca, Ph.D., one of the creators of the device and an associate professor in the Wallace H. Coulter Department of Biomedical Engineering at Georgia Tech and Emory University. "It would be part of a regular preventative medicine exam much like a PSA test or EKG (electrocardiogram), serving as a cognitive impairment vital sign of sorts."

The portable test runs patients through a battery of visual and auditory stimuli such as pictures and words that assess cognitive abilities relative to age, gauging reaction time and memory capabilities. Its software can track cognitive capabilities — and decline — year to year during annual appointments. And because the device blocks outside sound and light from the patient's environment, it can be administered in virtually any setting, providing more consistent results.

Preliminary analysis of the first 100 patients of a 400-person clinical study being conducted at Emory's Wesley Woods Center has shown that the 10-minute DETECT test has similar accuracy to the 90-minute "Gold Standard" pen and paper test.

With millions of baby boomers easing into late adulthood, the number of patients with Alzheimer's is expected to skyrocket over the next few decades. More than 24 million people worldwide are currently thought to have Alzheimer's disease and by 2040, an estimated 81 million people worldwide are expected to develop the disease.

To give these millions of potential Alzheimer's sufferers a chance to slow the disease's advance before serious symptoms set in, doctors need an inexpensive and easy-to- administer test to detect and track the cognitive decline associated with the early stages of the disease.

The DETECT device is designed to be administered while a patient is still healthy, tracking any abnormal decreases in the patient's cognitive performance over time. If a patient's performance declines outside the normal range, the patient would then undergo additional testing and care from a neurologist, neuropsychologist or other specialist.

The DETECT system includes an LCD display in a visor with an onboard dedicated computer, noise reduction headphones and an input device (controller). The display projects the visual aspect of the test, the headphones provide the verbal instructions and the controller records the wearer's response.

DETECT's creators have formed a company, called Zenda Technologies, to commercialize the device for MCI, as well as other conditions. Georgia Tech and Emory researchers are exploring other types of cognitive impairment such as Attention Deficit/Hyperactivity Disorder (ADHD) that could be picked up by DETECT. A version of the system designed to detect mild concussions on the sidelines of a football game, during other high-impact sports or on a battlefield is still being tested.

The research was funded with a grant from the Wallace H. Coulter Foundation and support from the Georgia Research Alliance through Georgia Tech's VentureLab.

Adapted from materials provided by Georgia Institute of Technology.

http://www.sciencedaily.com/releases/2008/01/080116145630.htm

Ambient Intelligence: Snowboarding To The New Frontier

Think how much more fun snowboarding could be if you could emote your feelings electronically to ski-buddies. Breakthroughs in capturing and transmitting ambient intelligence could make this a reality. (Credit: iStockphoto/Jason Lugo)

ScienceDaily (Jan. 16, 2008) — Think how many lives could be saved if emergency services were alerted the moment a pedestrian is run over. Think how much more fun snowboarding could be if you could emote your feelings electronically to ski-buddies. Breakthroughs in capturing and transmitting ambient intelligence could make these scenarios a reality.

The My Space/Facebook phenomenon has shown how we love to share personal information. But will we take the next step and share our feelings and emotions across the ether?

Whether it is sensors on our skin, in our clothing or embedded in the environment, research into ambient intelligence is advancing in leaps and bounds. We could soon be using technology in a whole new, human-centric way.

But before we can fully interact in a responsive electronic environment, a number of obstacles need to be overcome. For example, the development of miniaturised, unobtrusive hardware, clever interfaces, data-secure systems, autonomous and flexible network protocols, and more efficient wireless infrastructures.

There are already diverse applications using ambient technology on the market, but one crucial sticking point is that few of them are fully integrated into wireless communication systems. European researchers have been addressing this outstanding issue.

“The idea is to integrate sensor networks into wireless communication systems and to ‘capture’ the user’s environment, perhaps using a mobile phone as a gateway, and then transmit this context to a service platform to deliver a personalised service and act on situations,” says Laurent Herault, project coordinator of a research scheme developing new ways of capturing ambient intelligence in post-3G mobile communication systems through wireless sensor networks.

Remote emoting

The context captured can be an environmental one, such as location, but also the subject's emotional context – what is known as the "physiological state".

"We capture physiological parameters, such as temperature, heart rate and skin conductance levels [measuring sweat gland activity]," says Herault who heads the e-Sense project. "We analyse the evolution of these signals and the function of emotional input. For instance, we show [people] films and we analyse their reaction via sensors. We can determine if a person is afraid, happy, sad…"

The potential for applications is vast: it goes from entertainment, to e-health and safety, and industrial applications, such as remote asset monitoring. The consortium behind this, which includes a number of European universities, research institutes and companies, such as Telefonica, IBM, Fujitsu, Thales, Nokia Siemens Networks, EADS and Mitsubishi, has developed 26 scenarios and 16 audiovisual showcases demonstrating the use of sensor networks to capture ambient intelligence and use it in mobile communications.

Perhaps the most obvious scenarios focus on emergency situations, with systems contributing to improving the response of emergency services to car crashes and other accidents. Other applications also include leisure and sport.

"We can measure the feelings you experience while skiing, such as acceleration, speed and happiness. This can be useful if you want to share your experiences with friends," says Herault.

The EU-funded e-Sense also carried out studies on the acceptance of such technologies and their societal impact. Most of these were positive, with the best results coming from Nordic countries on healthcare, sport and entertainment applications.

Breakthrough science

The project has also achieved a number of technical breakthroughs with wider impact on the development of ambient intelligence. E-Sense focused on developing radio components, which are known to be the power consumption bottleneck in wireless sensor networks. So it has developed very small sensor nodes that consume up to ten times less power than the current state-of-the-art systems.

"We have developed an ultra-low-powered implementation of the ZigBee system and achieved our aim of 20 nanojoules per transmitted bit, which is significantly better than the energy efficiency of any chip on the market today," says Herault.

E-Sense has also defined an architecture which is adaptable to every module and every scenario, increasing the versatility and efficiency of communications. "We have developed an end-to-end system architecture which we call 'e-Stack', a very generic protocol stack with different subsystems: a connectivity subsystem, a middleware subsystem, an application subsystem and a management subsystem," says Herault.

"All subsystems are compatible and e-Stack is effectively a bit like Lego. It is a toolbox of protocol elements which can easily be connected to other elements, in order to have the most efficient protocol stack for your specific application, in terms of energy consumption and bit rate. The defined architecture also extends to beyond-3G systems and platforms, specifying an innovative interface and middleware solution."

New horizons

The e-Sense project, backed by the EU's FP6 funding programme, concluded at the end of 2007. But a new project under FP7, called Sensei, will take research a step further by integrating the powerful network islands made up of different protocol elements into the web.

"We believe that, in the future, most requests on the internet will be to obtain information originating from sensors," says Herault.

The consortium of 20 new partners behind Sensei, which includes Nokia, Ericsson and SAP, also intends to create a new Industrial Standardisation Group, under the guidance of the European telecommunications Standards Institute, with the aim of creating a European standard for wireless sensor networks.

All this could mean that in the not-so-distant future, you could use the internet to keep in touch with friends and family 24/7, detecting where they are, what they are doing and, crucially, how they feel. So, no need to rack your brains to come up with original Facebook status updates anymore.

Adapted from materials provided by ICT Results.

http://www.sciencedaily.com/releases/2008/01/080112080851.htm

Record Warm Summers Cause Extreme Ice Melt In Greenland

Large iceberg in Greenland. (Credit: iStockphoto/Rob Broek)

ScienceDaily (Jan. 16, 2008) — An international team of scientists, led by Dr Edward Hanna at the University of Sheffield, has demonstrated that recent warm summers have caused the most extreme Greenland ice melting in 50 years. The new research provides further evidence of a key impact of global warming and helps scientists place recent satellite observations of Greenland´s shrinking ice mass in a longer-term climatic context.

Dr Hanna of the University´s Department of Geography, alongside some of the World´s leading Greenland glaciologists and climatologists, analysed a combination of key meteorological and glaciological records spanning a number of decades as part of the research. The findings show how the Greenland Ice Sheet responded to more regional, rather than global, changes in climate between the 1960s and early 1990s. However the last fifteen years has seen an increase in ice melting and a striking correspondence of Greenland with global temperature variations, demonstrating Greenland´s recent response to global warming.

Summer 2003 was exceptionally warm around the margins of the Greenland Ice Sheet, which resulted in the second-highest meltwater running off from the Ice Sheet of the last 50 years. Summer 2005 experienced a record-high melt, which was very recently superseded in summer 2007 – a year almost as warm as 2003. The team of researchers includes some of the leading Greenland glaciologists and climatologists from the Free University of Brussels, University of Colorado, Danish Meteorological Institute and NASA Goddard Earth Science and Technology Center, University of Maryland Baltimore County, as well as four members of the University of Sheffield. Dr Edward Hanna said: "Our work shows that global warming is beginning to take its toll on the Greenland Ice Sheet which, as a relict feature of the last Ice Age, has already been living on borrowed time and seems now to be in inexorable decline. The question is can we reduce greenhouse-gas emissions in time to make enough of a difference to curb this decay?" The findings have been published in the 15 January 2008 issue of Journal of Climate.

Adapted from materials provided by University of Sheffield.

http://www.sciencedaily.com/releases/2008/01/080115102706.htm

Monkey Malaria Widespread In Humans And Potentially Fatal

ScienceDaily (Jan. 17, 2008) — A potentially fatal species of malaria is being commonly misdiagnosed as a more benign form of the disease, thereby putting lives at risk, according to research funded by the Wellcome Trust and the University Malaysia Sarawak.

Researchers in Malaysia studied more than 1,000 samples from malaria patients across the country. Using DNA-based technology they found that more than one in four patients in Sarawak, Malaysian Borneo, were infected with Plasmodium knowlesi, a malaria parasite of macaque monkeys, and that the disease was more widespread in Malaysia than previously thought. Infections were most often misdiagnosed as the normally uncomplicated human malaria caused by P. malariae.

Malaria, which kills more than one million people each year, is caused when Plasmodium parasites are passed into the bloodstream from the salivary glands of mosquitoes. Some types, such as P. falciparum, found most commonly in Africa, are more deadly than others. P. malariae, found in tropical and sub-tropical regions across the globe, is often known as "benign malaria" as its symptoms are usually less serious than other types of malaria.

Until recently, P. knowlesi, was thought to infect only monkeys, in particular long-tailed macaques found in the rainforests of South East Asia. Natural infections of man were thought to be rare until human infections were described in one area in Sarawak, Malaysian Borneo. However, in a study published today in the journal Clinical Infectious Diseases, Professors Janet Cox-Singh and Balbir Singh with colleagues at the University Malaysia Sarawak and three State Departments of Health in Malaysia have shown that knowlesi malaria is widespread in Malaysia.

Under the microscope, the early parasite stages of P. knowlesi look very similar to P. falciparum, the most severe form of human malaria, while the later parasite stages are indistinguishable from the more benign P. malariae. Misdiagnosis as P. falciparum is clinically less important as P. falciparum infections are treated with a degree of urgency and P. knowlesi responds to the same treatment. However, misdiagnosis as the more benign slower growing parasite P. malariae is a problem.

P. knowlesi is unprecedented among the malaria parasites of humans and non-human primates as it reproduces every 24 hours, and one of the features of fatal P. knowlesi infections is the high number of infected red blood cells in these patients. Therefore, even a short delay in accurate diagnosis and treatment could lead to the rapid onset of complications, including liver and kidney failure, and death.

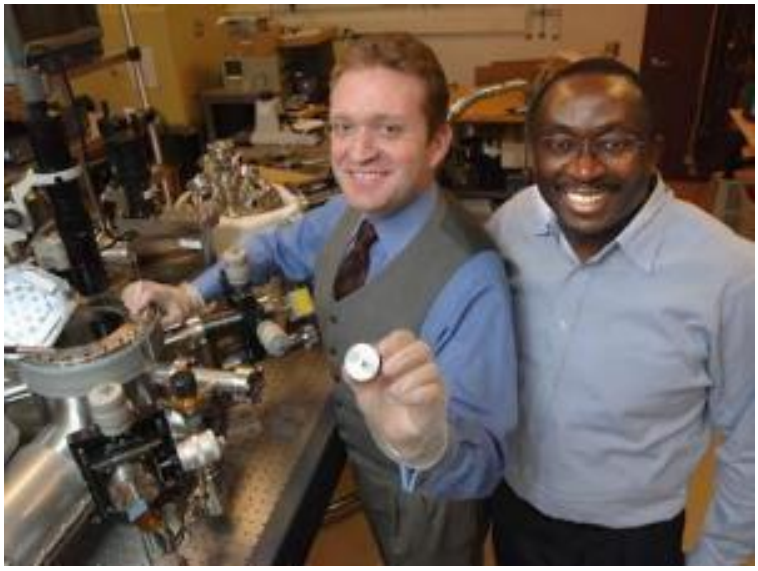
Using DNA detection methods, Professor Cox-Singh and colleagues found malaria infection with P. knowlesi to be widely distributed in Malaysian Borneo and mainland Malaysia, sometimes proving fatal. In addition, single human infections have been reported in Thailand and Myanmar.

"I believe that if we look at malaria infections in South East Asia more carefully, we will find that this potentially fatal type of the disease is more widespread than is currently thought," says Professor Cox-Singh. "Given the evident severity of the illness that it causes, I would recommend that doctors treating patients with a laboratory diagnosis of P. malariae remain alert to the possibility that they may be dealing with the potentially more aggressive P. knowlesi. This would be particularly important in patients who have spent time in the forest fringe areas of South East Asia where the non-human primate host exists."

Adapted from materials provided by Wellcome Trust, via EurekAlert!, a service of AAAS.

http://www.sciencedaily.com/releases/2008/01/080115132850.htm

Gas Sensor Is Tiny, Quick, Effective At Detecting Many Toxins



MIT research scientist Luis Velasquez-Garcia, left, and Akintunde Ibitayo Akinwande, professor of electrical engineering and computer science, are developing a tiny sensor that can detect hazardous gases, including biochemical warfare agents. (Credit: Photo by Donna Coveney)

ScienceDaily (Jan. 16, 2008) — Engineers at MIT are developing a tiny sensor that could be used to detect minute quantities of hazardous gases, including toxic industrial chemicals and chemical warfare agents, much more quickly than current devices.

The researchers have taken the common techniques of gas chromatography and mass spectrometry and shrunk them to fit in a device the size of a computer mouse. Eventually, the team, led by MIT Professor Akintunde Ibitayo Akinwande, plans to build a detector about the size of a matchbox.

"Everything we're doing has been done on a macro scale. We are just scaling it down," said Akinwande, a professor of electrical engineering and computer science and member of MIT's Microsystems Technology Laboratories (MTL).

Scaling down gas detectors makes them much easier to use in a real-world environment, where they could be dispersed in a building or outdoor area. Making the devices small also reduces the amount of power they consume and enhances their sensitivity to trace amounts of gases, Akinwande said.

He is leading an international team that includes scientists from the University of Cambridge, the University of Texas at Dallas, Clean Earth Technology and Raytheon, as well as MIT.

Their detector uses gas chromatography and mass spectrometry (GC-MS) to identify gas molecules by their telltale electronic signatures. Current versions of portable GC-MS machines, which take about 15 minutes to produce results, are around 40,000 cubic centimeters, about the size of a full paper grocery bag, and use 10,000 joules of energy.

The new, smaller version consumes about four joules and produces results in about four seconds.

The device, which the researchers plan to have completed within two years, could be used to help protect water supplies or for medical diagnostics, as well as to detect hazardous gases in the air.

The analyzer works by breaking gas molecules into ionized fragments, which can be detected by their specific charge (ratio of charge to molecular weight).

Gas molecules are broken apart either by stripping electrons off the molecules, or by bombarding them with electrons stripped from carbon nanotubes. The fragments are then sent through a long, narrow electric field. At the end of the field, the ions' charges are converted to voltage and measured by an electrometer, yielding the molecules' distinctive electronic signature.

Shrinking the device greatly reduces the energy needed to power it, in part because much of the energy is dedicated to creating a vacuum in the chamber where the electric field is located.

Another advantage of the small size is that smaller systems can be precisely built using microfabrication. Also, batch-fabrication will allow the detectors to be produced inexpensively.

Akinwande and MIT research scientist Luis Velasquez-Garcia plan to present their work at the Micro Electro Mechanical Systems (MEMS) 2008 conference the week of January 13. In December, they presented at the International Electronic Devices Meeting.

The research, which started three years ago, is funded by the Defense Advanced Research Projects Agency and the U.S. Army Soldier Systems Center in Natick, Mass.

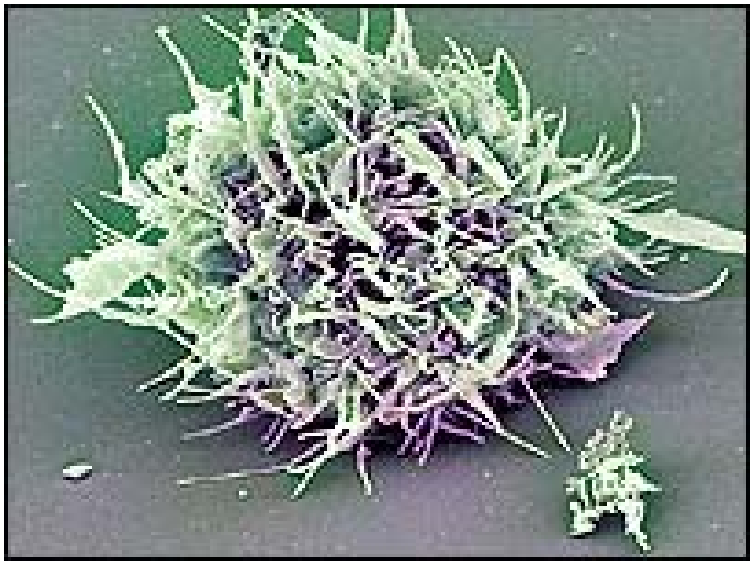
Adapted from materials provided by Massachusetts Institute of Technology.

http://www.sciencedaily.com/releases/2008/01/080111102929.htm

US team makes embryo clone of men

By Helen Briggs
BBC News science reporter

US scientists say they have produced embryos that are clones of two men, in an attempt to produce patient-specific stem cells.



Researchers removed DNA from donated human eggs, and replaced it with DNA from the skin cells of two volunteers.

They produced embryos with genetic material that matched the men's, but did not go on to extract stem cells.

UK experts say the research, published in the journal Stem Cells, is a small but not a great step forward.

'World first'

The team at Stemagen Corporation in La Jolla, California, says the work could be an important stage in developing embryonic stem cells for patients.

> **It shows that the approach using human embryos does still have promise**
> Prof Jack Price

The group produced five embryos called blastocysts from 25 donated eggs. DNA fingerprinting proved that at least one of these was a clone.

"We're the first in the world to take adult human cells and then document that in fact we were able to clone embryos from them," lead researcher Dr Samuel Wood told the BBC.

He said the embryos were destroyed in the process of verifying they were clones, but they were now working on creating stem cell lines.

Dr Lyle Armstrong of Newcastle University is one of a handful of other researchers who have made cloned human embryos using a technique known as nuclear transfer pioneered in Dolly the sheep. Unlike the US team, the Newcastle group used DNA from embryonic rather than mature tissue.

Dr Armstrong said the US study showed that the objective of using cells from an adult person to make individual stem cells might one day be possible.

"It's a small step but not a great step forward," he told BBC News. "It's interesting that they've been able to repeat somatic cell nuclear transfer and get embryos of the stage where embryonic stem cells could be derived, but it is disappointing that they've failed to derive a stem cell line."

Ethical issues

Many scientists believe that being able to make stem cell lines tailored to individual patients could revolutionise the treatment and prevention of human diseases.

But the research has proved controversial. Korean scientist Hwang Woo-suk claimed in 2005 that he had created such cell lines, but the study was later discredited. Meanwhile, critics have objected on ethical grounds, saying it is wrong to use embryos for research.

Some scientists argue that clones might not be required to harvest stem cells. Last year, researchers in Japan and the US were able to "rewind" adult cells back to their embryonic state using a new technique.

Professor Jack Price of King's College, London, is an expert on neural stem cells. He too said the Californian experiment was a small step forward but not a breakthrough.

"This constitutes technical progress," he said. "It shows that the approach using human embryos does still have promise and it does provide justification for continuing that avenue of research."

TECHNIQUES FOR MAKING 'STEM CELLS'
Therapeutic cloning produces stem cells which can develop into different types of body cell, making them ideal for research into treatment of disease.
But this technology involves the creation and destruction of embryos, which is ethically controversial. The stem cells created also run the risk of being rejected by the body.
The new technology, nuclear reprogramming, creates stem-like cells from the patient's own cells, avoiding both these problems.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/1/hi/sci/tech/7194161.stm

Published: 2008/01/17 16:59:31 GMT

Those who said libraries dead should eat their words
Like `everybody's living room,' libraries are vital to civic life, their supporters say
January 17, 2008
PHILIP MARCHAND
ENTERTAINMENT REPORTER

Toronto culture has its ups and downs, but the city's libraries have always remained solid.

We seem to be, relatively speaking, a city of readers and our library system is supreme in North America – far overshadowing in total circulation, number of branches and number of visits, the library systems of such cities as Chicago and Los Angeles.

The civic purse is empty, but the city has recently coughed up enough to keep the system going and to help maintain that supremacy. Toronto city Councillor Kyle Rae (Ward 27) cites an increase of close to a million dollars over last year in the capital budget for the library, which covers repairs and renovations (see sidebar above).

More should be on the way for the operating budget – book purchases and so on – as well as for the capital budget.

"The libraries are for many young people the initiator of their cultural experience. We need to invest in that," says Rae.

This recommitment to libraries is keeping with a worldwide trend towards revitalization of libraries – a trend that was not supposed to happen. Fourteen years ago, I talked to Vancouver futurist Frank Ogden, who scorned library projects, especially the then-new Vancouver library.

"You're going to find them having the stage life of a fruit fly," he proclaimed.

A 30-cm computer disc that could hold a million 300-page books would replace these obsolete institutions, Ogden predicted.

Today, libraries are more popular than ever. In part that's because they are a prime example of what urban sociologist Ray Oldenburg in his book *The Great Good Place* calls a "third place." The first place is home, the second place is your workspace, and the third is a public space where you can simply drop in, relax, read a book or magazine, talk with other people. Examples, according to Oldenburg, are pubs, coffee shops, streetscapes such as the Yonge-Dundas Square.

These places are vital to civic life. They "lend a public balance to the increased privatization of home life," Oldenburg says.

A case can be made that the public library is the example of the third space. "We're everybody's living room, the place where anybody can come in to access information," says Anne Bailey, the Toronto Public Library's director of branch libraries.

"We're still people. You can't sit in a room all day looking at a disc. People need to have that public space and to learn from each other. The public library provides that perfect venue."

Perfect venue it may be, but what about luring teenage boys who are not big readers and who hate school? Can they ever learn to love the library? These younger males were part of library-resistant demographics cited in a 2001 report Building Value Together: A Strategy for Change for Ontario Public Libraries.

The "strategy" turned out to be creating "youth advisory groups"; there are 39 among the 99 branches of the Toronto library, which in turn led to rock concerts in some of the libraries, plus CD collections of music by local indie bands and collections of Japanese comic books. The Young Voices Writers Conference, held in November by the North York Central Library, attempted to draw teens in.

The event was hosted by Nicole Cohen, co-founder of *Shameless* magazine, poet Jay Millar, comedy writer Jean Paul and more conventional literary figures such as memoirist Wayson Choy.

"It's a way of engaging youth and getting them involved in the library," says Bailey.

"Once you get them, one thing leads to another. They come, they're in the space, they're in the environment, resources are at their disposal. It's a positive experience.

"For many people who haven't been successful in school, the public library is one place they feel comfortable," adds Bailey. "It's not intimidating. They're not being scored or measured."

In an age where literacy is more crucial than ever, you do what you can.

http://www.thestar.com/article/294811

Despite tough times, our libraries thrive

Shelving assistant Gabriela Rachkova, 17, restocks books at the soon to be re-opened Jane/Dundas Branch.

The city boasts the busiest libraries in the world and system is expanding with building, outreach
January 17, 2008
BRUCE DEMARA
ENTERTAINMENT REPORTER

Combine architectural excellence with community input and, even in the toughest of economic times, you can't keep a world-class public library system down.

Ten years after amalgamation, the Toronto Public Library is undergoing a modest building boom, using a successful strategy that reaches out and continues to draw in more city residents: both the established and newly arrived.

"The system is thriving," says city librarian Josephine Bryant. "Library service has improved for all residents across the city in spite of a very difficult environment."

In fact, it continues to set the benchmark for the world, with its openness to all residents.

On a per-capita basis, the city's 99 branches are the busiest and most utilized by its citizenry around the globe, lending out more than 30 million books and other materials annually.

From a relatively modest capital budget of $18.3 million in 2008, the library system will see seven major expansion projects completed throughout the year, with the first – at Jane St. and Dundas St. W. – slated to reopen on Feb. 4.

Additionally, the Toronto Reference Library is in the midst of a $30 million expansion to roll out over the next decade.

The formula for growth is simple: get city council approval, hire an architect and go to the community right away, inviting input through open houses where conceptual drawings can be viewed and questions answered face to face.

The dividends include library branches with better-designed, expanded spaces and greater public use, Bryant says.

Residents' use of upgraded library space usually goes up as much as 40 per cent, but the Malvern District Library saw an 80 per cent hike in usage.

"The excitement of the building project, that something very positive was happening in the community, and the excellence of the reworked design and the architecture, creates a pride of ownership and excitement," Bryant says.

The other major reason why library use is rising is found in the partnerships with other agencies.

The Toronto Board of Education uses library space to provide English-as-a-second-language classes, allowing new Canadians to learn about the library services available in their communities.

A recent partnership with Citizenship and Immigration Canada does the same, with settlement workers providing orientation programs at local branches.

That builds on the library system's traditional services: providing study materials for students, computers for Internet access, and other resources for those seeking to upgrade skills or for job hunting.

"Libraries ... are conducive to quiet study and getting work done. There are many, many people who are upgrading and changing jobs.... We've always had a very strong role to play in terms of life-long learning," Bryant says.

Toronto Councillor Shelley Carroll (Ward 33), the city's budget chief, says the library board has consistently made the case that its branches are "as important as any community centre in the city."

Places like the Fairview Mall branch in Carroll's ward provide professional-quality theatre space that is lacking in the area, she says.

At the Wellesley-Sherbourne branch – one of the newest – Eric Mykhalovskiy, 44, was basking in some afternoon sunlight while doing research on a recent weekday afternoon.

"For me, it's convenient because it's close to my home. I prefer to come to the library because it's a social place, there are other people around," Mykhalovskiy says.

"This particular library has a really nice open space. You can see outside and the light comes in."

Ngoc Ban, 16, says she uses the branch's computer system for Internet access and does research for a course she's taking at the University of Toronto.

"I can ask for help if I can't find something ... because at home, I'm an only child and I can't ask my parents because they really don't know English. I like the service. The librarians are very nice," Ban says.

Ilshat Khairov, 17, leafing through daily newspapers in the branch's reading area, says he takes advantage of the quiet to do research for high school projects away from a noisy household.

"It's awesome."

http://www.thestar.com/printArticle/294788

Possible van Gogh sketchbook found
Expert believes drawings to be by famed post-Impressionist artist
Reuters
updated 1:24 p.m. CT, Wed., Jan. 16, 2008

ATHENS, Greece - A sketchbook believed to have been Vincent van Gogh's containing portraits similar to those in his most famous works has been found in Greece, its owner said on Wednesday.

Taken by a Greek resistance fighter from a Nazi train, the sketchbook was discovered in storage boxes by his daughter, who is seeking to establish its authenticity with the Van Gogh Museum in Amsterdam.

One art expert commissioned by Greek writer Doreta Peppa concluded the sketches were by the 19th century Dutch post-Impressionist artist. Foreign experts would soon examine the work to rule on its authenticity, she said.

"Who would not be moved by such a discovery? This is van Gogh's soul," Peppa told Reuters. "He intended this sketchbook as a gift and there is no other like it in the world."

The booklet includes sketches of faces and characters, some similar to those incorporated in van Gogh paintings and drawings including 'The Potato Eaters', 'Sorrow' and 'Pere Tanguy'.

Peppa said she had discovered the small brown sketchbook, with more than 60 pages of sketches and drawings, in boxes left in storage by her late father. If genuine, it could be worth close to four million euros, she said.

A photograph of what Peppa says is the artist himself was also found.

"The notebook ... is a great gift to the whole world of arts," said Greek artist and art expert Athanasio Celia, who was asked by Peppa to examine the sketchbook.

"It is also an exclusive testimony that drawing was, as he believed, the backbone of painting," Celia said in his report, which concludes the sketches are authentic.

The booklet bears the stamp of the Brussels Royal Academy of Art where van Gogh moved to in 1880, as well as a Nazi stamp.

"This sketchbook was my father's who was a Greek resistance fighter in World War Two," Peppa said holding up scanned pages of the booklet which she keeps in a bank deposit box.

"According to his writings, he took it during an attack on a Nazi train retreating from Greece at the end of the German occupation," she said.

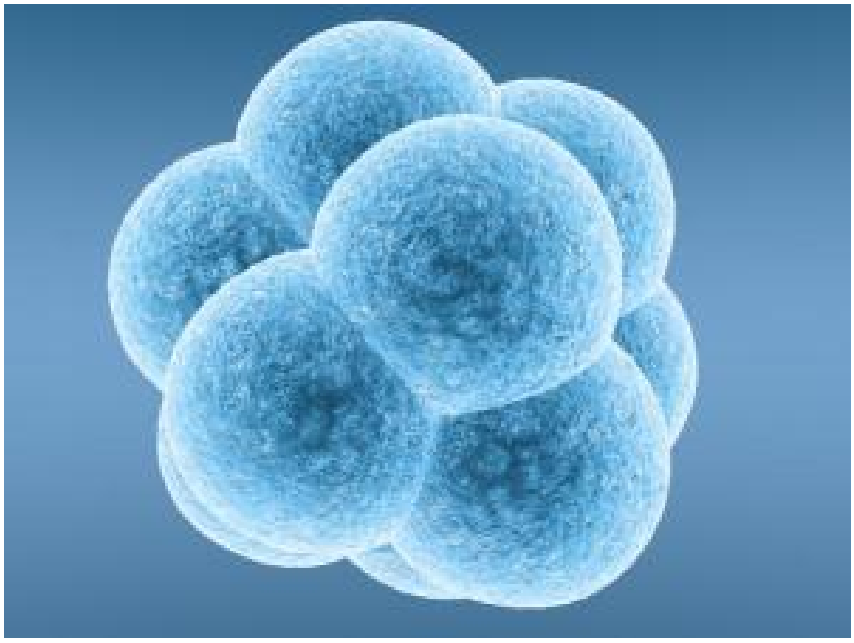
"I am open for any serious scientist to examine the sketchbook," Peppa added.

With a roughly estimated price tag of close to 4 million euros, the sketchbook, could fetch more at an auction, if genuine, but Peppa said she had no immediate plans to sell it.

"I don't want it to leave my hands," she said. "I don't see it as a way to get rich."

http://www.msnbc.msn.com/id/22686142/

Hybrid Human-Animal Embryo Research Approved In The UK



The nuclear transfer technique would involve removing the nucleus of a cow egg - which contains most of its genetic information - and fusing the cow egg with the nucleus of a human cell such as a skin cell. The egg will then be encouraged to divide until it is a cluster of cells only a few days old called a blastocyst, or an early-stage cloned embryo. (Credit: iStockphoto)

ScienceDaily (Jan. 18, 2008) — Two research groups in the United Kingdom have been given permission to use hybrid human-animal embryos in research which aims to lead to the development of new therapies for debilitating human conditions such as Parkinson's disease and stroke.

Newcastle University stem cell scientist Dr. Lyle Armstrong, who is based at the North East England Stem Cell Institute (NESCI) at the International Centre for Life in Newcastle, has received a licence from the Human Fertilisation and Embryology Authority (HFEA) to carry out research using human-animal cytoplasmic embryos. Another group -- the Stem Cell Biology Laboratory Wolfson Centre for Age-Related Diseases, at King's College London -- has also received a research license by HFEA to carry out research using hybrid embryos.

Dr. Armstrong says: "The award of the HFEA licence is great news. We initially applied for approval to use cow eggs as a means to understand the way they can convert skin cells into embryonic stem cells. Finding better ways to make human embryonic stem cells is the long term objective of our work and understanding reprogramming is central to this."

"Cow eggs seem to be every bit as good at doing this job as human eggs so it makes sense to use them since they are much more readily available but it is important to stress that we will only use them as a scientific tool and we need not worry about cells derived from them ever being used to treat human diseases," he said.

"Now that we have the licence we can start work as soon as possible. We have already done a lot of the work by transferring animal cells into cow eggs so we hope to make rapid progress."

Background information

Until now, work on the development of therapeutic cloning has used human eggs from consenting IVF patients but these are in short supply. Animal eggs are considered to be a viable alternative for research to understand more about how cells behave.

At first the NESCI team would be working with cow eggs. The nuclear transfer technique would involve removing the nucleus of a cow egg - which contains most of its genetic information - and fusing the cow egg with the nucleus of a human cell such as a skin cell. The egg will then be encouraged to divide until it is a cluster of cells only a few days old called a blastocyst, or an early-stage cloned embryo.

The scientists would attempt to extract stem cells from the blastocyst after six days. Stem cells are building blocks that can grow into any type of tissue such as liver, heart and muscle cells. The quality and the viability of stem cells would then be checked to see if nuclear transfer technique has worked. The scientists would also be observing the way that the cells are reprogrammed after fusion to see if there are useful processes they could replicate in the laboratory. The embryo would have to be destroyed at 14 days old in accordance with the licence.

The eventual aim is to develop a way of creating stem cells to grow new tissue that is genetically matched to individual patients. For example, scientists hope to take a cell from a patient and re-programme it so that stem cells can be extracted to grow new tissue for damaged body parts without fear of immune rejection.

There is no possibility of allowing any of the animal hybrid cells to be used to treat patients but this approach will protect precious resources of human eggs at this early development stage and complement existing NESCI research using human eggs.

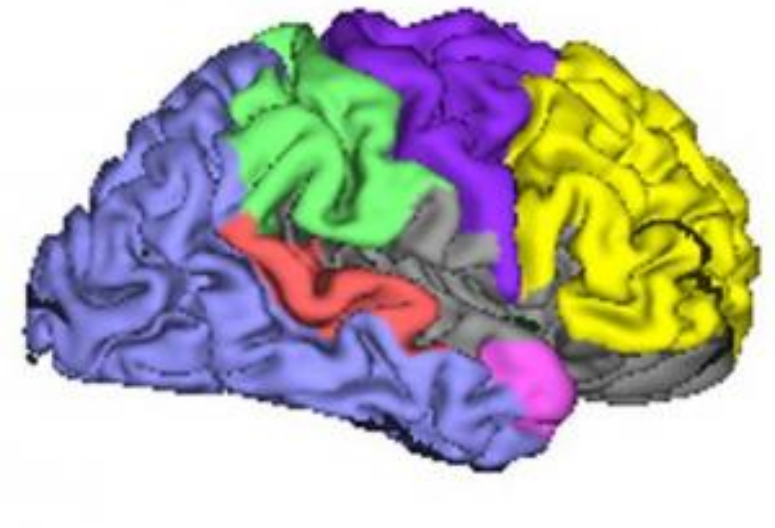
The studies will be heavily regulated under the conditions of the HFEA licence.

The HFEA statement on licensing of applications to carry out research using human-animal cytoplasmic hybrid embryos can be found at the following web address: http://www.hfea.gov.uk/en/1640.html

Adapted from materials provided by Newcastle University.

http://www.sciencedaily.com/releases/2008/01/080118102223.htm

Discovery Of 'Creator' Gene For Cerebral Cortex Points To Potential Stem Cell Treatments



Cerebral cortex model. (Credit: Image courtesy of University of California - Irvine)

ScienceDaily (Jan. 18, 2008) — University of California, Irvine researchers have identified a gene that is specifically responsible for generating the cerebral cortex, a finding that could lead to stem cell therapies to treat brain injuries and diseases such as stroke and Alzheimer's.

Dr. Edwin Monuki, doctoral student Karla Hirokawa and their colleagues in the departments of Pathology & Laboratory Medicine and Developmental & Cell Biology found that a gene called Lhx2 serves as the long-sought cortical "creator" gene that instructs stem cells in the developing brain to form the cerebral cortex. This portion of the brain is responsible for higher sensory and cognitive functions, such as language, decision-making and vision. Without this gene, cortical cells will not form.

"This new understanding of Lhx2's role in cortical development can potentially be used in stem cell research efforts to grow new cortical neurons that can replace damaged ones in the brain," said Monuki, an assistant professor of pathology. "This finding has implications for continuing efforts to help people recover from a stroke or slow the progress of neurodegenerative diseases."

Lhx2 is among a group of genes -- called selector genes -- that act during key moments of embryonic and fetal development, directing stem cells to grow into specific parts of the body -- such as brain, blood and bone.

In tests on rodents, the researchers found that Lhx2's cortical selector activity is critical only during the stage when the developing cortex is made up of stem cells, not before or after. In addition, they found that cortical stem cells that don't express the Lhx2 gene turn into a different cell type -- called a hem cell -- that induces neighboring cells to become the hippocampus, the oldest part of the cortex in evolutionary terms and a major memory center of the brain.

Lhx2's role in cerebral cortex development has far-reaching implications in the nascent field of stem cell research. The Monuki lab is currently studying how to activate Lhx2 genes in neural stem cells and initiate the process in which new cortical cells can grow. "If successful, the concept of using Lhx2 to instill stem cells with cortical properties could be a basis of clinical studies that could one day help treat patients," he said.

Researchers in Monuki's lab are deeply involved with stem cell research. Last month, they published a study identifying a new way to sort stem cells that should be quicker, easier and more cost-effective than current methods. The technique could in the future expedite therapies for people with conditions ranging from brain and spinal cord damage to Alzheimer's and Parkinson's diseases.

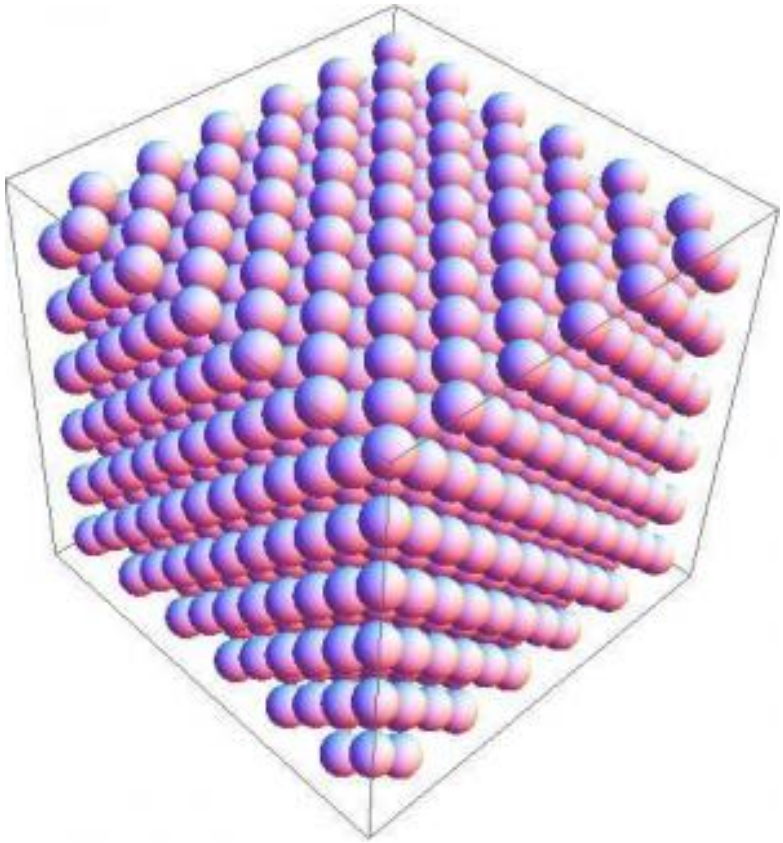
Results of this study appear in the Jan. 18 issue of Science.

Co-authors of the Science study are Shubha Tole, Vishakha Mangale, Prasad Satyaki, Nandini Gokulchandran, Satyadeep Chikbire, Lakshmi Subramanian, Ashwin Shetty, Ben Martynoga and Jolly Paul of the Tata Institute of Fundamental Research in Mumbai, India; Lisa Flanagan of UC Irvine; Mark Mai of Swarthmore College; and Yuqing Li of the University of Alabama at Birmingham. The National Institutes of Health, the Whitehall Foundation and the March of Dimes Birth Defects Foundation provided funding support.

Adapted from materials provided by University of California - Irvine.

http://www.sciencedaily.com/releases/2008/01/080117140837.htm

Materials' Crystal Properties Illuminated By Mathematical 'Lighthouse'



"Ground states" are the lowest energy states of matter. They are created in real life by taking a liquid and slowly cooling it until you reach absolute zero temperature. The resulting arrangement of molecules or particles is a "ground state," which often is an ordered crystal structure. This image shows an ordered ground state (called the face-centered cubic lattice), which is the end result of the slow cooling process. (Credit: Courtesy of Torquato Labs)

ScienceDaily (Jan. 18, 2008) — A deeper fundamental understanding of complex materials may now be possible, thanks to a pair of Princeton scientists who have uncovered a new insight into how crystals form.

The researchers' findings reveal a previously unknown mathematical relationship between the different arrangements that interacting particles can take while freezing. The discovery could give scientists insight into the essential behaviors of materials such as polymers, which are the basis of plastics.

Molecules in a material cooled to absolute zero can take on a multitude of different configurations. Historically, scientists' difficulty with identifying crystallized molecules' spatial arrangements from this high number of possible configurations has blocked theoretical efforts to understand these materials' qualities, but the new findings could offer the tool that science needs.

"We believe our 'duality relations' will be a useful theoretical tool to understand how individual particles come together to form a crystal," said Salvatore Torquato, a professor of chemistry who co-wrote the paper with senior chemist Frank Stillinger. "If we can tune the interactions among particles that form a crystal, we might be able to create materials that respond to light or mechanical stress in novel ways."

A material that maintains its exact size and shape through extremes in temperature, for example, might be valuable in the manufacture of orbiting space telescopes, whose mirrors need to retain their shape as they pass from sunlight into the Earth's shadow.

A crystal is the state of matter that is easiest to analyze because its frozen molecules are motionless and often regularly organized. A crystal's properties -- its ability to bend light, for example -- generally reveal valuable information about how its constituent molecules will behave at higher temperatures, such as when they become a liquid.

The challenge is that many complex materials can crystallize into a multitude of different structures. When a substance is cooled to nearly absolute zero, and it can take on an enormously large number of possible "ground states" -- the term for the molecular arrangement with the lowest possible energy. Scientists seek to determine the true ground state because it provides a fundamental understanding of matter in the solid state and its possible uses. However, determining which molecular pattern is the true ground state requires mathematical proof that is hard to come by.

"We resort to approximations," said Christos Likos, a professor of theoretical physics at the University of Dusseldorf in Germany. "They help us produce meaningful results sometimes, but we need to have a lighthouse occasionally to show us we're on the right path. Such lighthouses are rare in this business, but Sal and Frank have found one."

Torquato and Stillinger's findings explore particles' behavior as they attract and repel each other over varying distances. By analyzing this behavior, the scientists were able to conceive a precise mathematical correspondence -- called duality relations -- between possible arrangements of particles. The work will enable the researchers to draw important conclusions about how particles at very low temperatures interact over great distances, a situation that is very difficult to treat theoretically.

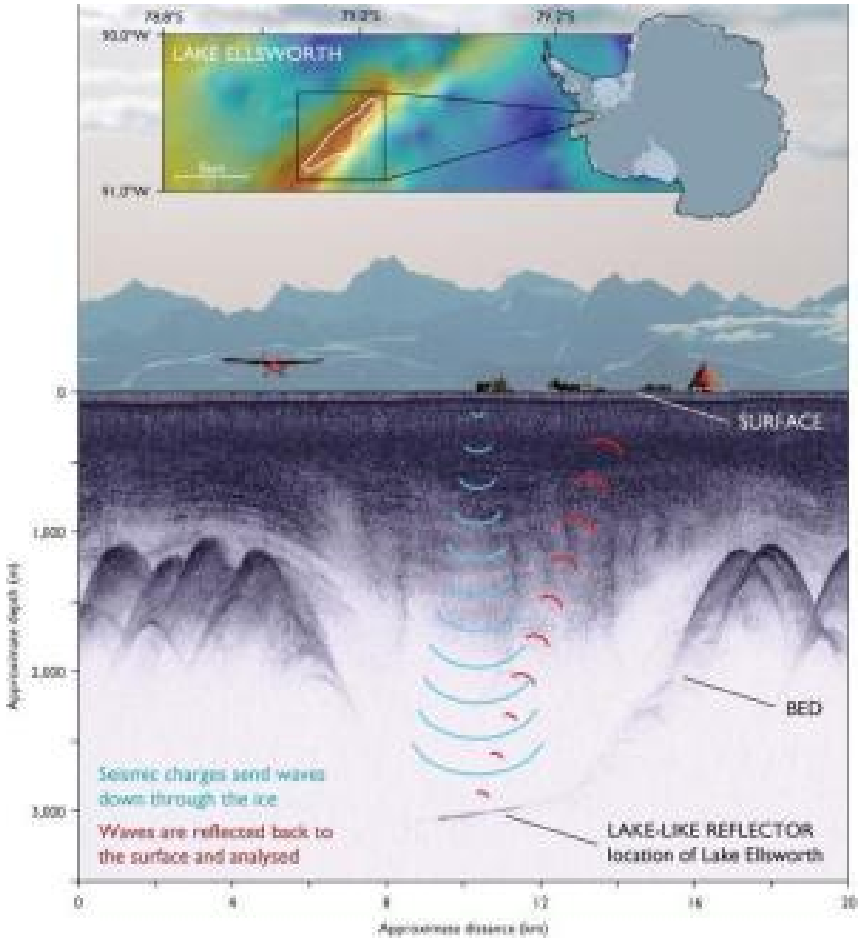
"Once ground states can be determined and controlled with certainty, scientists might create materials with properties virtually unknown in nature," Torquato said.

The Department of Energy funded the team's research, which appears in the Jan. 16 edition of the journal Physical Review Letters.

Adapted from materials provided by Princeton University, via EurekAlert!, a service of AAAS

http://www.sciencedaily.com/releases/2008/01/080117102127.htm

Exploration Of Lake Hidden Beneath Antarctica's Ice Sheet Begins



The exploration of sub-glacial Lake Ellsworth. Seismic charges (blue) send waves down through the ice. Waves are reflected back to the surface and analyzed (red). (Credit: Image courtesy of British Antarctic Survey)

ScienceDaily (Jan. 17, 2008) — A four-man science team led by British Antarctic Survey's (BAS) Dr Andy Smith has begun exploring an ancient lake hidden deep beneath Antarctica's ice sheet. The lake -- the size of Lake Windermere (UK) -- could yield vital clues to life on Earth, climate change and future sea-level rise.

Glaciologist Dr Smith and his colleagues from the Universities of Edinburgh and Northumbria are camped out at one of the most remote places on Earth conducting a series of experiments on the ice. He says,

"This is the first phase of what we think is an incredibly exciting project. We know the lake is 3.2km beneath the ice; long and thin and around 18 km2 in area. First results from our experiments have shown the lake is 105m deep. This means Lake Ellsworth is a deep-water body and confirms the lake as an ideal site for future exploration missions to detect microbial life and recover climate records.

"If the survey work goes well, the next phase will be to build a probe, drill down into the lake and explore and sample the lake water. The UK could do this as soon as 2012/13."

This ambitious exploration of 'subglacial' Lake Ellsworth, West Antarctica, involves scientists from 14 UK universities and research institutes, as well as colleagues from Chile, USA, Sweden, Belgium, Germany and New Zealand. The International Polar Year* project Principal Investigator is Professor Martin Siegert from the University of Edinburgh. He says,

"We are particularly interested in Lake Ellsworth because it's likely to have been isolated from the surface for hundreds of thousands of years. Radar measurements made previously from aircraft surveys suggest that the lake is connected to others that could drain ice from the West Antarctic Ice sheet to the ocean and contribute to sea-level rise."

Professor Siegert is already planning the lake's future exploration. He continues, "Around 150 lakes have been discovered beneath Antarctica's vast ice sheet and so far little is known about them. Getting into the lake is a huge technological challenge but the effort is worth it. These lakes are important for a number of reasons. For example, because water acts as a lubricant to the ice above they may influence how the ice sheet flows. Their potential for unusual life forms could shed new light on evolution of life in harsh conditions; lake-floor sediments could yield vital clues to past climate. They can also help us understand the extraterrestrial environment of Europa (one of the moons of Jupiter)."

Adapted from materials provided by British Antarctic Survey.

http://www.sciencedaily.com/releases/2008/01/080115173541.htm

How Some Plants And Animals Appear To Defy The Aging Process

A mature bristlecone pine tree. The Rocky Mountain bristlecone pine is known to produce viable cones at over 4000 years of age. (Credit: iStockphoto/Harry Thomas)

ScienceDaily (Jan. 17, 2008) — The inevitability of the aging process and the onset of senescence - the process of deterioration with age - is a fact of life for most plant and animal species.

Some, however, live to extreme ages, such as the English yew, of which at least one alive today is recorded in the Domesday Book; while a few organisms seem to defy current evolutionary understanding altogether, by appearing to have indefinite generation lengths with negligible senescence. For example, the Rocky Mountain Bristlecone Pine is known to produce viable cones at over 4000 years of age.

New research by ecologist Dr Patrick Doncaster from the University of Southampton, and mathematician Professor Robert Seymour from University College London demonstrates the principle by which some organisms can indefinitely postpone the onset of senescent aging.

'Our analysis indicates that sedentary organisms, including some types of tree, are particularly likely to achieve this postponement of the onset of senescent aging,' comments Dr Doncaster. 'It evolves through many generations of ancestors "crowding out" young individuals of the same species that attempt to grow to adulthood alongside them.' He continues: 'The inevitability of senescence amongst organisms with repeated reproduction has well-developed theoretical foundations. In essence, since reproduction carries physiological costs, natural selection favors reaping early benefits, and delaying the cost in physiological decline until later in life when there is a greater chance of being dead anyway from environmental hazards.

'But some organisms show negligible senescence and a few, such as Hydra, which is a very simple freshwater animal, and the Bristlecone Pine, appear to have indefinite generation lengths. We have now answered the question of how they could have evolved from ancestors with senescent life histories. Mathematical analysis shows that the crowding out of young individuals favors selection on ever-reducing senescence. Our computer simulations indicate that this runaway process could even lead to immortality.' The research paper 'Density Dependence Triggers Runaway Selection of Reduced Senescence' is published in PLoS Computational Biology.

Adapted from materials provided by University of Southampton.

http://www.sciencedaily.com/releases/2008/01/080116164713.htm

Contact Lenses With Circuits, Lights A Possible Platform For Superhuman Vision

Contact lenses with metal connectors for electronic circuits were safely worn by rabbits in lab tests. (Credit: University of Washington)

ScienceDaily (Jan. 17, 2008) — Movie characters from the Terminator to the Bionic Woman use bionic eyes to zoom in on far-off scenes, have useful facts pop into their field of view, or create virtual crosshairs. Off the screen, virtual displays have been proposed for more practical purposes -- visual aids to help vision-impaired people, holographic driving control panels and even as a way to surf the Web on the go.

The device to make this happen may be familiar. Engineers at the University of Washington have for the first time used manufacturing techniques at microscopic scales to combine a flexible, biologically safe contact lens with an imprinted electronic circuit and lights.

"Looking through a completed lens, you would see what the display is generating superimposed on the world outside," said Babak Parviz, a UW assistant professor of electrical engineering. "This is a very small step toward that goal, but I think it's extremely promising." The results were presented today at the Institute of Electrical and Electronics Engineers' international conference on Micro Electro Mechanical Systems by Harvey Ho, a former graduate student of Parviz's now working at Sandia National Laboratories in Livermore, Calif. Other co-authors are Ehsan Saeedi and Samuel Kim in the UW's electrical engineering department and Tueng Shen in the UW Medical Center's ophthalmology department.

There are many possible uses for virtual displays. Drivers or pilots could see a vehicle's speed projected onto the windshield. Video-game companies could use the contact lenses to completely immerse players in a virtual world without restricting their range of motion. And for communications, people on the go could surf the Internet on a midair virtual display screen that only they would be able to see.

"People may find all sorts of applications for it that we have not thought about. Our goal is to demonstrate the basic technology and make sure it works and that it's safe," said Parviz, who heads a multi-disciplinary UW group that is developing electronics for contact lenses.

The prototype device contains an electric circuit as well as red light-emitting diodes for a display, though it does not yet light up. The lenses were tested on rabbits for up to 20 minutes and the animals showed no adverse effects.

Ideally, installing or removing the bionic eye would be as easy as popping a contact lens in or out, and once installed the wearer would barely know the gadget was there, Parviz said.

Building the lenses was a challenge because materials that are safe for use in the body, such as the flexible organic materials used in contact lenses, are delicate. Manufacturing electrical circuits,

however, involves inorganic materials, scorching temperatures and toxic chemicals. Researchers built the circuits from layers of metal only a few nanometers thick, about one thousandth the width of a human hair, and constructed light-emitting diodes one third of a millimeter across.

They then sprinkled the grayish powder of electrical components onto a sheet of flexible plastic. The shape of each tiny component dictates which piece it can attach to, a microfabrication technique known as self-assembly. Capillary forces -- the same type of forces that make water move up a plant's roots, and that cause the edge of a glass of water to curve upward -- pull the pieces into position.

The prototype contact lens does not correct the wearer's vision, but the technique could be used on a corrective lens, Parviz said. And all the gadgetry won't obstruct a person's view.

"There is a large area outside of the transparent part of the eye that we can use for placing instrumentation," Parviz said. Future improvements will add wireless communication to and from the lens. The researchers hope to power the whole system using a combination of radio-frequency power and solar cells placed on the lens, Parviz said.

A full-fledged display won't be available for a while, but a version that has a basic display with just a few pixels could be operational "fairly quickly," according to Parviz.

The research was funded by the National Science Foundation and a Technology Gap Innovation Fund from the University of Washington.

Adapted from materials provided by University of Washington.

http://www.sciencedaily.com/releases/2008/01/080117125636.htm

Leukaemia cell culprit discovered

Isabella (l) and Olivia both have the pre-leukaemic stem cells

A study of four-year-old twin girls has identified a rogue cell that is the root cause of childhood leukaemia.

The finding could mean more specific and less intensive treatments for all children with the blood cancer.

Both twins were found to have the "pre-leukaemic" cells in their bone marrow, although to date only one has developed leukaemia.

UK researchers reported in Science that a second genetic mutation is needed for full-blown disease to develop.

Leukaemia occurs when large numbers of white blood cells take over the bone marrow leaving the body unable to produce enough normal blood cells.

Now we know about the cell, hopefully we can find an Achilles heel we can target
Professor Tariq Enver

Along with lymphoma it accounts for almost half of childhood cancers.

Olivia Murphy, from Bromley in Kent, developed acute lymphoblastic leukaemia when she was two-years old - but so far her twin sister, Isabella, is healthy.

Researchers found they both have "pre-leukaemic stem cells" containing a mutated gene, which forms when the DNA is broken and rejoined at another point.

The pre-leukaemic cells are transferred from one twin to the other in the womb through their shared blood supply.

But it takes another genetic mutation in early childhood for the cells to cause disease.

This second mutation, which may be caused by infection, occurred in Olivia but not Isabella.

Doctors do regular tests on Isabella to look for signs of the cancer but once she reaches adolescence it is thought the rogue cells will disappear.

Achilles heel

About 1% of the population is thought to be born with pre-leukaemia cells. Of these, 1% receive the second "hit" that leads to cancer. Current treatments are far too aggressive to justify eliminating the rogue cells before cancer develops, which also means screening is unlikely.

But attacking the pre-leukaemic cells in children with leukaemia would be a better way of treating the disease and ensuring it does not come back, the researchers said. Study leader Professor Tariq Enver, from the Medical Research Council Molecular Haematology Unit in Oxford, said: "These are the cells which drive and maintain the disease.

"Now we know about the cell, hopefully we can find an Achilles heel we can target."

Professor Mel Greaves, from the Institute of Cancer Research and co-author on the study, said he suspected that the stem cells could escape conventional chemotherapy and cause relapse.

He said the study in the twins had been unique. "There is an element of chance, we still have to work out why it happens in one child and not the other.

"We're pretty certain it's triggered by common childhood infection." Dr Phil Ancliff, consultant in paediatric haematology at Great Ormond Street Hospital, said 90% of children now survived leukaemia because of intensive chemotherapy, but that it came at a price.

Olivia lost the sight in one eye after she was unable to fight an infection due to her cancer treatment.

"A significant number of children are now being over-treated but we don't know which children," he said. In the future, he added, children could be tested to see if the stem cells had been killed off after the first few weeks of chemotherapy with some being able to stop treatment earlier, sparing them harmful side-effects.

Dr Bruce Morland, consultant paediatric oncologist at Birmingham Children's Hospital and chairman of the Children's Cancer and Leukaemia Group, said: "The identification of the leukaemic stem cell has been one of the 'Holy Grails' for cancer biologists and this study certainly brings us one step closer."

Professor Vaskar Saha, professor of paediatric oncology at Cancer Research UK, said: "This important paper shows how leukaemia develops, and how it can persist even after therapy.

"By identifying the cells involved, it raises the hope that we will be able to identify children at risk of relapse, and develop new, targeted drugs to treat the disease."

The study was funded by the charity Leukaemia Research.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/health/7192420.stm

Published: 2008/01/17 19:00:51 GMT

Teachers voice plagiarism fears
More than half of teachers believe internet plagiarism is a serious problem among sixth-form students, a teaching union survey suggests.

The 58% of 278 teachers who identified it as a problem said they thought 25% of work returned by pupils included material copied from internet sites.

One teacher said a piece of work they saw still contained website adverts.

The Association of Teachers and Lecturers said schools must introduce robust policies to tackle plagiarism.

The survey was carried out in December among ATL union members who teach sixth-formers in schools and Further Education colleges in England, Wales and Northern Ireland.

Gill Bullen, a teacher from Itchen College in Southampton, told the survey: "Two GCSE English retake students were very late handing in their last piece of coursework, an essay on Romeo and Juliet.

> **I had one piece of work so blatantly cut and pasted that it still contained adverts from the web page**
> Teacher, Leeds

"When finally given in, the pieces turned out to be identical - and significantly better than either of them could have done.

"Not only that, the essays given in didn't quite answer the title question I had set."

Another teacher from Leeds, who took part in the survey, said: "I had one piece of work so blatantly cut and pasted that it still contained adverts from the web page."

ATL general secretary, Dr Mary Bousted, said: "This survey highlights one of the risks of putting so much emphasis on passing tests and getting high scores at any cost.

"And teachers are struggling under a mountain of cut-and-pasting to spot whether work was the student's own or plagiarism.

"Schools and colleges need to have robust policies to combat plagiarism, but they also need help from the exam boards and government with resources and techniques for detecting cheating."

Policy uncertainty

It takes up precious time to spot plagiarism, say teachers.

Mark Jones, from Wirral Metropolitan College, said: "Any work found to be plagiarised will not be marked - the student has to do it again.

"However, the problem is that, with the best will in the world, you haven't got enough hours in the day to search out where information was plagiarised from to prove it."

More than 55% of teachers questioned in the ATL survey said students did not have sufficient understanding of what plagiarism was and what counts as legitimate research.

> **We will work closely with teachers to develop even more effective and reliable coursework assessments**
> Jim Knight, schools minister

Diana Baker, from Emmanuel College in Durham, said: "I have found once students clearly understand what plagiarism is, its consequences and how to reference correctly so they can draw on published works, plagiarism becomes less of a problem.

"I think the majority of students who engage in plagiarism do it more out of ignorance than the desire to cheat, they really want to succeed on their own merit."

Having a robust school or college policy on plagiarism seems to be critical.

However, more than 55% said either their school did not have a policy to deal with plagiarism or they were unaware of one.

Schools minister Jim Knight said: "Despite our rigorous system, more needs to be done to assure all parents that coursework assesses pupils' work in a fair and robust way.

"Last year, we asked the Qualifications and Curriculum Authority to look at making GCSE coursework more robust and reliable.

"As a result of the QCA's report, we will be removing all GCSE coursework from maths and stipulating that in other subjects, coursework must be supervised in classroom style conditions.

"We will work closely with teachers to develop even more effective and reliable coursework assessments."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/uk_news/education/7194772.stm

Published: 2008/01/18 01:34:43 GMT

Warning on rising Med Sea levels
The level of the Mediterranean Sea is rising rapidly and could increase by up to half a metre in the next 50 years, scientists in Spain have warned.

A study by the Spanish Oceanographic Institute says levels have been rising since the 1970s with the rate of increase growing in recent years.

It says even a small rise could have serious consequences in coastal areas.

The study noted that the findings were consistent with other investigations into the effects of climate change.

The study, entitled Climate Change in the Spanish Mediterranean, said the sea had risen "between 2.5mm and 10mm (0.1 and 0.4in) per year since the 1990s".

If the trend continued it would have "very serious consequences" in low-lying coastal areas even in the case of a small rise, and "catastrophic consequences" if a half-metre increase occurred, the study warned.

Global climate change

Scientists noted that sea temperatures had also risen significantly by 0.12 to 0.5C since the 1970s.

Sea level rise is a key effect of global climate change. There are two major contributory effects: the melting of ice, and expansion of sea water as the oceans warm.

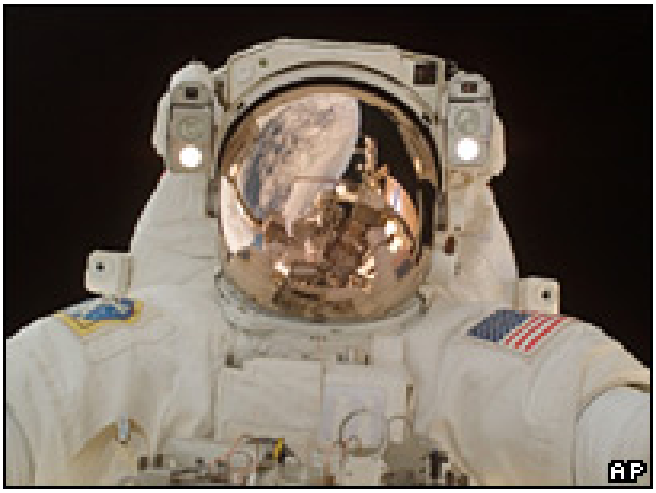
Last month, a study by the Intergovernmental Panel on Climate Change said the world's sea levels could rise twice as much this century as UN climate scientists had previously predicted.

The Nobel Prize-winning IPCC predicted a maximum sea level rise of 81cm (32in) this century.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/1/hi/sci/tech/7197379.stm

Published: 2008/01/19 01:07:30 GMT

Nasa investigates virtual space
The US space agency is exploring the possibility of developing a massively multiplayer online (MMO) game.



The virtual world would be aimed at students and would "simulate real Nasa engineering and science missions".

The agency has published a "request for information" (RFI) from organisations interested in developing the platform.

Nasa believe the game would help find the next generation of scientists and engineers needed to fulfil its "vision for space exploration".

"A high quality synthetic gaming environment is a vital element of Nasa's educational cyberstructure," the RFI reads.

"The MMO will foster career exploration opportunities in a much deeper way than reading alone would permit and at a fraction of the time and cost of an internship program."

Space mission

Nasa already has a presence in the 3D virtual universe.

The agency owns an island in Second Life where individuals and groups with an interest in the space programme can meet, share ideas and conduct experiments.

CoLab, as it is called, is the brainchild of scientists at the Nasa Ames Research Center in San Francisco.

The agency hopes that the environment could one day be used to allow the public to take part in virtual missions.

"We at Nasa are working hard to create opportunities for what I might call participatory exploration," the director of the project, Simon Worden, has said.

"We are looking at how this island can be a portal for all to fly along on space missions," he told delegates at the National Space Society's (NSS) conference last year.

"When the next people step onto the surface of the Moon in a little over a decade, your avatar could be with them," he said.

The latest proposal was published by Nasa's Learning Technologies Project Office which supports and develops education projects to promote science and technology.

Job seeker

The document says that games are becoming increasingly important in education and could be useful for teaching a range of skills.

"Virtual worlds with scientifically accurate simulations could permit learners to tinker with chemical reactions in living cells, practice operating and repairing expensive equipment, and experience microgravity," it says.

The document calls for a game engine that includes "powerful physics capabilities" that can "support accurate in-game experimentation and research".

"A Nasa-based MMO could provide opportunities for students to investigate science, technology, engineering, and mathematics career paths while participating in engaging game-play."

Other organisations such as the US armed forces already use online gaming as a recruitment tool.

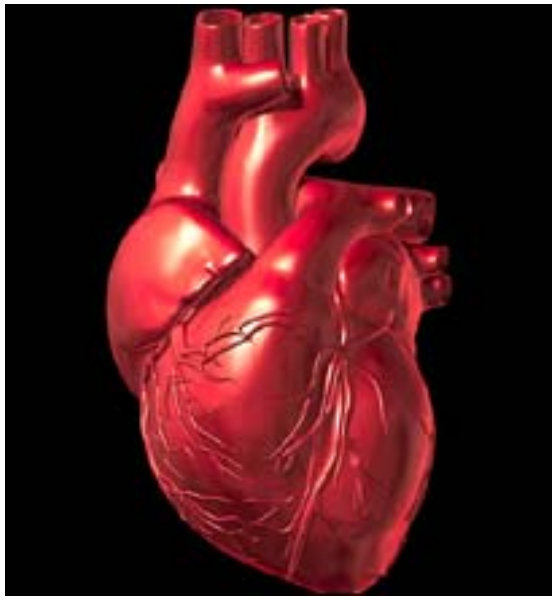
America's Army for example introduces players to the "seven Army Core Values" and now claims to be one of "the most popular computer games in the world".

Nasa has asked for interested organisations to respond to the request by the 15 February.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/1/hi/technology/7195718.stm

Published: 2008/01/18 12:22:08 GMT

Immune therapy 'cuts heart risk'
Some people with heart failure might benefit from a therapy which helps dampen their overactive immune systems.



US researchers treated more than 1,000 patients, and found those with certain types of heart failure had a lower risk of death or hospitalisation.

Writing in the Lancet journal, they said large numbers of patients could benefit if bigger studies confirmed the findings.

UK experts agreed, saying that much more research would be needed.

> **Our findings suggest a role for non-specific immunomodulation as a potential treatment for a large segment of the heart failure population**
> Houston Methodist Hospital researchers

Heart failure is caused by a weakening of the organ's ability to pump blood around the body.

In some cases, this has been linked to the body's own immune system, which causes damaging inflammation in its tissues.

Up to 24,000 deaths a year in the UK are thought to be related to the condition.

The latest study, at the Methodist Hospital in Houston, Texas, tries to "damp down" the immune reaction, and hopefully reduce inflammation.

To test how well it worked, the progress of more than 1,000 patients was compared with a similar number given a "dummy" treatment called a placebo.

Immune signals

The method involved taking blood from the patients, and exposing it to chemicals designed to change some of the body's own immune signals, and boost anti-inflammatory signals.

This kind of approach is called "immunomodulation".

After a 22-week cycle of treatment, the patients were monitored for the next 10 months.

Among the treated group, there were 399 deaths or hospital admissions - slightly fewer than the 429 in the untreated group.

This meant that looking at all the patients together, there was either a tiny effect, or none at all, which the researchers described as "disappointing".

However, in patients with specific types of heart failure, such as those who had not had a heart attack, the effect appeared to be more significant, with between a 25% and 39% reduction in risk.

The researchers wrote: "Our findings suggest a role for non-specific immunomodulation as a potential treatment for a large segment of the heart failure population."

However, they conceded that a much bigger and more detailed study, involving far more patients, would be needed before the treatment could be adopted widely.

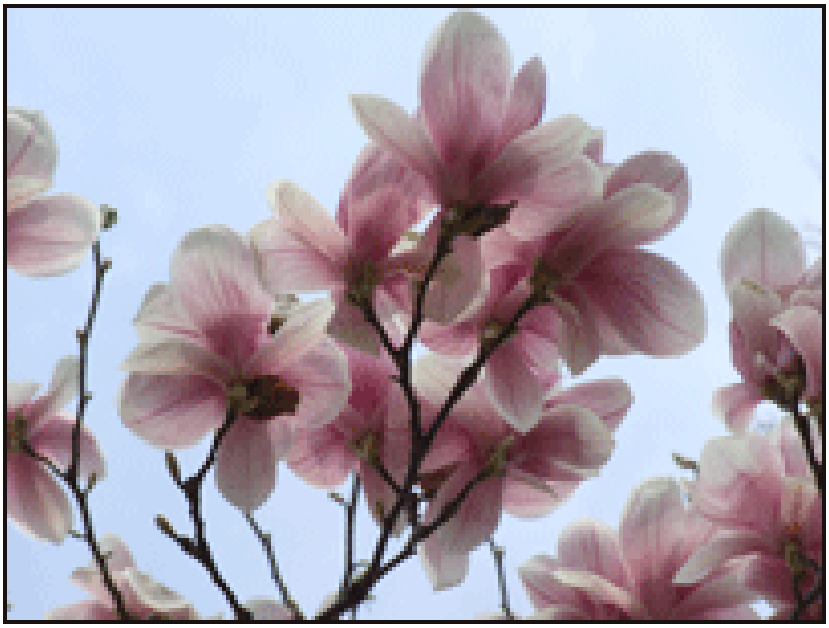
Professor Peter Weissberg, the British Heart Foundation's Medical Director echoed this: "The study is interesting, but it's still early days.

"A lot more research needs to go into this."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/1/hi/health/7195684.stm

Published: 2008/01/20 00:01:28 GMT

Medicinal plants 'facing threat'
Hundreds of medicinal plants are at risk of extinction, threatening the discovery of future cures for disease, according to experts.



Over 50% of prescription drugs are derived from chemicals first identified in plants.

But the Botanic Gardens Conservation International said many were at risk from over-collection and deforestation.

Researchers warned the cures for things such as cancer and HIV may become "extinct before they are ever found".

The group, which represents botanic gardens across 120 countries, surveyed over 600 of its members as well as leading university experts.

MIRACLE CURES MOST AT RISK
Yew tree - Cancer drug paclitaxel is derived from the bark, but it takes six trees to create a single dose so growers are struggling to keep up
Hoodia - Plant has sparked interest for its ability to suppress appetite, but vast quantities have already been "ripped from the wild" as the search for the miracle weight drug continues
Magnolia - Has been used in traditional Chinese medicine for 5,000 years as it is believed to help fight cancer, dementia and heart disease. Half the world's species threatened, mostly due to deforestation
Autumn crocus - Romans and Greeks used it as poison, but now one of the most effective treatments for gout. Under threat from horticulture trade

They identified 400 plants that were at risk of extinction.

These included yew trees, the bark of which forms the basis for one of the world's most widely used cancer drugs, paclitaxel.

Hoodia, which originally comes from Namibia and is attracting interest from drug firms looking into developing weight loss drugs, is on the verge of extinction, the report said.

And half of the world's species of magnolias are also under threat.

The plant contains the chemical honokiol, which has been used in traditional Chinese medicine to treat cancers and slow down the onset of heart disease.

The report also said autumn crocus, which is a natural treatment for gout and has been linked to helping fight leukaemia, is at risk of over-harvest as it is popular with the horticultural trade because of its stunning petals.

Many of the chemicals from the at-risk plants are now created in the lab.

But the report said as well as future breakthroughs being put at risk, the situation was likely to have a consequence in the developing world.

It said five billion people still rely on traditional plant-based medicine as their primary form of health care.

Report author Belinda Hawkins said: "The loss of the world's medicinal plants may not always be at the forefront of the public consciousness.

"However, it is not an overstatement to say that if the precipitous decline of these species is not halted, it could destabilise the future of global healthcare."

And Richard Ley, of the Association of the British Pharmaceutical Industry, added: "Nature has provided us with many of our medicines.

"Scientists are always interested in what they can provide and so it is a worry that such plants may be at risk."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/1/hi/health/7196702.stm

Published: 2008/01/19 00:15:13 GMT

Bladder surgery 'not necessary'
Radiotherapy can be a better option than surgery for people with bladder cancer, being effective while preserving continence, say experts.

Doctors typically opt to remove the whole bladder when the cancer is advanced.

But work by Cancer Research UK shows this should not necessarily be recommended as "gold standard" care.

Bladder cancer is the fifth most common cancer in the UK, with 10,093 new cases diagnosed in 2004.

Removing the bladder can treat the disease, but it may result in continence problems that the person has to live with for the rest of their life.

> **Losing your bladder has a daily impact on your life which for some people could be more devastating than the cancer itself**
> Fred Walker who had his bladder removed to treat his cancer

Fred Walker, 67 and of Knottingley in West Yorkshire, was diagnosed with bladder cancer in 1983. He had his bladder removed.

He said: "I know from my own experience that losing your bladder has a daily impact on your life which for some people could be more devastating than the cancer itself.

"Body disfigurement and embarrassment caused by having your bladder removed can be quite hard to accept.

"I have spoken to many people who would welcome an alternative to living with a urostomy bag as a result of surgery."

Kinder alternative

The study by a team from the Leeds Institute of Molecular Medicine at the University of Leeds found that survival rates among bladder cancer patients treated with radiotherapy were the same as those associated with radical cystectomy - surgery involving the complete removal of the bladder.

They looked at the medical records of 169 patients treated for invasive bladder cancer between 1996 and 2000.

Of those, 97 had been treated with radiotherapy, while 89 had undergone surgery.

Work is ongoing to see if adding in chemotherapy could improve survival
Professor Alan Horwich of the Institute of Cancer Research

Both groups had comparable survival rates at five years and eight years after treatment (53-57%), despite the radiotherapy group being on average seven years older.

There was also no real difference in how likely the disease was to return in the two treatment groups - 34% of the radiotherapy treatment group experiencing recurrence, compared with 37.5% of those treated with surgery.

Dr Anne Kiltie, lead author of the research published in the International Journal of Radiation Oncology Biology Physics, said: "Until now surgery has been considered better than radiotherapy in the treatment of bladder cancer that has spread to the muscle wall of the bladder.

"Although radiotherapy carries its own long term side effects, the interesting finding in our study was that the older, less fit patients did as well as the younger, fitter patients who had surgery to treat their cancer.

"Since bladder cancer is a disease of older people, radiotherapy will play an increasingly important role as the population ages, and this study encourages us to believe that such elderly patients will not be disadvantaged by having an alternative curative treatment."

Dr Lesley Walker of Cancer Research UK said: "This study certainly opens the debate on which treatments should be recommended for invasive bladder cancer patients."

He said more research was needed to establish if radiotherapy should replace surgery as the gold standard treatment for these patients.

Professor Alan Horwich of the Institute of Cancer Research said more work was also needed to improve the survival rates of bladder cancer patients.

"Work is ongoing to see if adding in chemotherapy could improve survival."

He said it was important to select the best treatment protocol for the individual - for some it might be surgery, while for others it might be radiotherapy.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/1/hi/health/7195744.stm

Published: 2008/01/19 00:28:35 GMT

Ancient Antarctic eruption noted

By Richard Black
Environment correspondent, BBC News website

Scientists have found what they say is the first evidence of a volcanic eruption under the Antarctic ice sheet.

They believe the volcano erupted about 2,000 years ago, and would have burst through its ice covering, producing a burst of steam and rocky debris.

The British Antarctic Survey (Bas) scientists report their finding in the journal Nature Geoscience.

They say it could aid understanding of an ice mass which is likely to play a key role in climate change.

The researchers discovered the eruption's traces by analysing radar data collected during an airborne survey of the area in 2004/5.

> **We believe this was the biggest eruption in Antarctica during the last 10,000 years**
> Hugh Corr, Bas

It showed a layer of volcanic ash - highly reflective to radar - that had been deposited on the ice surface and subsequently buried under successive years of snow in what are now the Hudson Mountains.

In the middle of the area, the rock underneath the ice rises up in the shape of a mountain as much as 1km high.

The thickness of ice above suggests the eruption occurred just over 2,200 years ago.

"The discovery of a 'subglacial' volcanic eruption from beneath the Antarctic ice sheet is unique in itself," said Bas's Hugh Corr, lead author on the scientific paper.

"We believe this was the biggest eruption in Antarctica during the last 10,000 years. It blew a substantial hole in the ice sheet, and generated a plume of ash and gas that rose about 12km into the air."

Acid test

Additional evidence for the age of the eruption comes from ice cores that have been extracted from various parts of the white continent.

Many show, at about 2,200 years ago, a thin layer of ice which conducts electricity unusually well.

The Bas team suggests the volcano may well have been responsible, by blasting acids and other conductive chemicals into the air which subsequently fell to the ground and were incorporated into the ice.

"The ash and the sulphuric acid and so on would have been blasted out mixed up with steam from the melting ice," said David Vaughan of Bas, who also worked on the project.

"The ash came down in an elliptical pattern around the volcano, but the acid would have stayed up for much longer and drifted much further away before coming down," he told BBC News.

The Hudson Mountains lie close to Pine Island Glacier, one of the West Antarctic glaciers whose flow has accelerated in recent years.

Combined with satellite evidence showing that the West Antarctic sheet is losing mass, this had led some polar scientists to suggest that warmer ocean waters are accelerating the flow of ice into the sea. In the long run this could make a substantial contribution to rising sea levels.

But volcanoes which are not conspicuously active at present may also be generating heat under the ice.

"This one is probably producing heat and melt water," said Professor Vaughan.

"That would end up under Pine Island Glacier and could be thinning it.

"This complicates things. However, it cannot explain the more widespread thinning of West Antarctic glaciers that together are contributing nearly 0.2mm per year to sea level rise."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/1/hi/sci/tech/7194579.stm

Published: 2008/01/20 18:06:15 GMT

Coffee 'raises miscarriage risk'
Pregnant women should consider avoiding caffeine, say researchers who found even moderate consumption in early pregnancy raises the miscarriage risk.

Currently, the Food Standards Agency sets an upper limit during pregnancy of 300mg - or four cups of coffee a day.

But an American Journal of Obstetrics and Gynaecology study found more than 200mg of caffeine a day doubled the risk compared to abstainers.

Experts said they would review the data to see if advice needed changing.

Women probably should consider stopping caffeine consumption during pregnancy
Study author Dr Li

Pat O'Brien, consultant obstetrician and spokesman for the Royal College of Obstetricians and Gynaecologists, said based on the findings he would now be advising women in their first 12 weeks of pregnancy to abstain from caffeine altogether. "The first 12 weeks is a very vulnerable time for the baby. It's when most miscarriages occur," he explained.

He said most women in early pregnancy went off the taste of caffeinated drinks anyway and so should not find abstaining from them too difficult.

But he said it was unclear whether pregnant women needed to avoid caffeine in later pregnancy.

Miscarriage risk

An estimated one in five pregnancies in the UK will end in miscarriage, affecting around 250,000 women in the UK every year.

There are a number of well-established risk factors, such as increased maternal age, a previous history of miscarriage, and infertility.

But the causes of the majority of miscarriages are not fully understood.

Caffeine has been mooted as a risk factor before, but studies have yielded conflicting results.

For the latest research, Dr De-Kun Li and colleagues at the Kaiser Permanente Division of Research, studied 1,063 women who had become pregnant in the last month or two.

300 mg of caffeine is roughly equivalent to:
Four average cups or three average mugs of instant coffee
Three average cups of brewed coffee
Six average cups of tea
Eight cans of regular cola drinks
Four cans of so-called "energy" drinks
400g (eight standard 50g bars) of normal chocolate
Caffeine content in a cup of tea or coffee varies by different brands and brewing methods

Source: Food Standards Agency

They asked the women to provide a detailed diary about their caffeine intake up to their 20th week of pregnancy. When they compared this information with how many of the women had miscarried by 20 weeks gestation, 172 of the women in total, they found a link.

Compared with non-users, women who consumed up to 200mg of caffeine a day had an increased risk of miscarriage - 15% versus 12%.

For women who drank more than 200mg, the risk increased to 25%.

Abstinence

The increased risk appeared to be related to the caffeine itself, rather than other coffee ingredients because other caffeinated beverages such as tea and hot chocolate showed a similar trend to coffee. Caffeine is able to cross the placenta to the foetus, but it is not clear what affect this has on the growing baby. Dr Li said: "The main message for pregnant women from these findings is that they probably should consider stopping caffeine consumption during pregnancy."

HAVE YOUR SAY I don't believe all this modern rubbish about what you should and shouldn't consume during pregnancy Janet, Romford, UK Zoe Wheeldon from the British Coffee Association said the latest research, although well designed and robust, did not change the current Food Standards Agency recommendation of a safe upper limit of 300mg of caffeine per day for pregnant women.

"This evidence must be reviewed in conjunction with existing research and it is important to review all the available data rather than taking one study in isolation." A spokesman from the Food Standards Agency said: "In order to provide a more robust basis for the FSA's advice to pregnant women on caffeine consumption, an FSA-funded study, involving around 2,500 pregnant women, was commissioned in 2003.

"This is almost complete and the results will be presented to the Committee On Toxicity in closed session for consideration. "We will ask the committee to also look at this new American study. When the committee has reached conclusions the agency will, if appropriate, revise its advice on caffeine consumption in pregnancy."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/1/hi/health/7195500.stm

Published: 2008/01/21 05:06:05 GMT

Gene advance on immune disorder
The genes involved in the devastating immune system disease Lupus, which affects 50,000 people in the UK, have been identified.

A team led by London's Imperial College examined the genetic makeup of 3,000 women, publishing their findings in the journal Nature Genetics.

The suspect genes could open the door to research into new treatments.

Charity Lupus UK said that the find might one day lead to a test to speed up the diagnosis of the condition.

This study represents a milestone in progress towards unravelling the secrets of the disease
Professor Timothy Vyse
Imperial College London

Lupus is a complex condition, mostly affecting women, which frequently causes skin rash, joint pains and fatigue, and which can also lead to inflammation of the kidneys and other internal organs.

It happens when the person's own immune system starts launching attacks on healthy tissue, and the only current treatments aim to suppress the immune system to reduce this.

The study looked at 720 women with the illness, and compared their genes with those of 2,337 who are free of the disease.

This revealed three candidate genes with strong links to Lupus, and a few others with weaker links to the disease.

One of the strong candidates, the ITGAM gene, is known to play a role in the immune system.

The other genes identified were more surprising to the experts, but could, they say, hold the key to developing more effective therapies.

Diagnosis hope

Professor Timothy Vyse, from Imperial College London, and one of the authors of the study, said: "Living with Lupus can be really tough.

"We currently can treat the disease by suppressing the immune system, but we urgently need to understand in much more detail what goes wrong with the immune system so that we can design better treatments.

"This study represents a milestone in progress towards unravelling the secrets of the disease.

He said that he was hoping to collect further blood samples from other Lupus patients to confirm the results, and asked volunteers to get in touch.

Jane Dunnage, the chairwoman of charity Lupus UK, and herself a Lupus patient, said that one advantage of the discovery of Lupus-related genes might be to speed up diagnosis.

"Every patient is different, and you often have different symptoms such as rashes or joint pain which could apply to a lot of conditions, so it can be years before a diagnosis of Lupus is finally made.

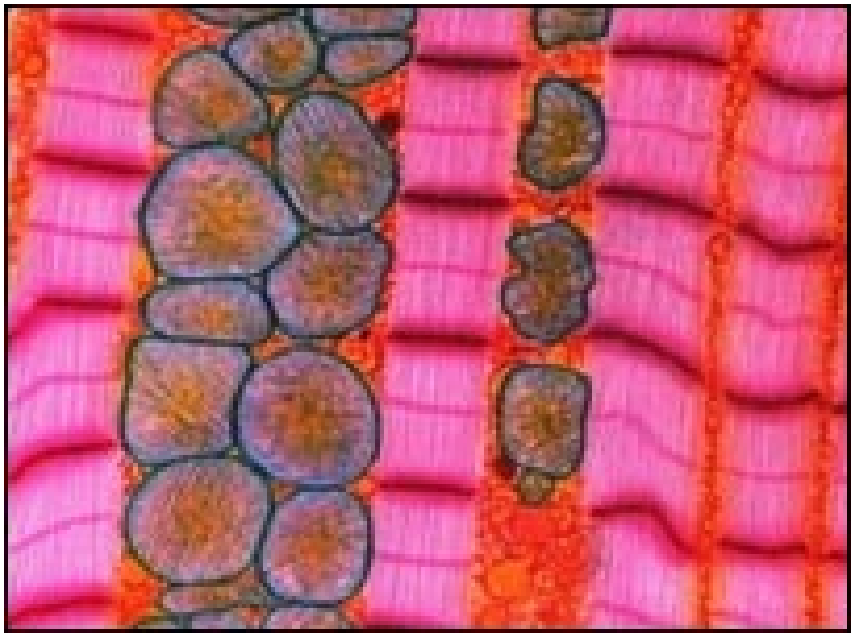
"If we knew what the genes were that are involved, in theory that could be done much more quickly.

"This is a really welcome development for Lupus patients."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/1/hi/health/7196083.stm

Published: 2008/01/21 00:02:04 GMT

Muscular dystrophy stem cell hope
A new way to manipulate human embryonic stem cells (ESCs) offers hope of a treatment for muscular dystrophies.



The muscle-wasting conditions are caused by genetic mutations which block production of a key protein in cells.

In theory, ESCs could be used to replace defective cells - but getting them to form muscle cells in sufficient quantity has proved difficult.

Nature Medicine details US work using genetic manipulation to overcome the problem, with positive results in mice.

Embryonic stem cell technology has the potential to become a powerful tool
Dr Marita Pohlschmidt
Muscular Dystrophy Campaign

However, much work is required before the technique can be tested in humans.

The genetic mutations that cause muscular dystrophy - of which Duchenne muscular dystrophy is the most common - lead to loss of production of a key structural protein of muscle cells called dystrophin.

When this occurs the cells can no longer regenerate after injury, resulting in progressive muscle weakness and eventual death.

Currently there is no effective treatment for muscular dystrophy.

Scientists have tried to develop ways to transplant muscle cells called myoblasts to replace the faulty cells.

But attempts have failed because the cells do not survive well, and have a limited ability to migrate to the areas where they are most needed.

Alternative source

Researchers believe that ESCs may provide a more adaptable alternative source of replacement cells - but until now it has proved difficult to produce them in sufficient number to have any therapeutic effect.

In the latest study, a team at the University of Texas Southwestern used genetic manipulation techniques to stimulate the production of a key chemical inside ESCs that triggers their transformation into muscle cells, followed by cell sorting to purify the muscle-forming cells.

This led to the creation of enough partially-formed new muscle cells to potentially have a real therapeutic impact on mice.

The cells were then delivered to the muscle either through direct injection, or intravenous infusion, and the researchers measured significantly improved muscle function in the animals, the first time such a result has been obtained using ESCs.

They also say that because the cells were highly purified when introduced to the mice, the risk of tumour formation - another problem with previous attempts to use ESCs - was eliminated.

They accept that at least a decade's work is still required to refine the technique before it can be applied in clinical trials.

Dr Marita Pohlschmidt, director of research at the Muscular Dystrophy Campaign, said: "Embryonic stem cell technology has the potential to become a powerful tool to treat a number of muscular dystrophies and related conditions.

"The results presented in this paper are promising because they demonstrate that embryonic stem cells can develop in to muscle cells when injected into an animal model.

"However, this area of research is still in its infancy and much more work must be done before stem cell technology can be regarded as a viable route for treatment of muscle disease."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/1/hi/health/7191852.stm

Published: 2008/01/21 00:04:06 GMT

Sheltered lives

When did kids stop playing outside?

By Jenna Russell | January 20, 2008

THINK BACK TO the secret places of your childhood -- the quarry; the climbing tree; the junkyard full of treasures; the clearing in the woods where you went to be alone. Now imagine how many of those places still exist, and how many kids in your old neighborhood still go there -- nature-averse, electronics-obsessed, overscheduled youngsters that they are. Chances are, your old stomping grounds are silent, the paths you wore between them long ago grown over.

Roger Hart knows this wistful territory better than anyone. In 1972, as a graduate student at Clark University, the young researcher set out to understand the geography of childhood. He journeyed to a not-so-exotic locale -- a village in Vermont -- and spent two years tracking the movements of a species that, remarkably, had never been closely studied in its natural environment: the human child. (At the time, says Hart, "we knew more about the ecology of baboons than the ecology of children.") Running, playing, and digging in the dirt with packs of kids from 5 to 12 years old, he discovered that virtually all of them had outdoor places they considered their own, where they went to hide, reflect, or commune with nature.

When Hart returned to the same town two years ago, to repeat his research and learn how childhood has changed in 36 years, he discovered a universe transformed in a single generation. The children had moved indoors, and the intricate, outdoor play-world they had once invented and inhabited on their own was gone. In the wake of the shift he found nagging questions about its effects on children's creativity and independence. Now 60 and a professor of environmental psychology at the City University of New York, Hart is working on a film and a book about his research, tentatively titled "Childhood Revisited."

IDEAS: Why had there been a failure to look closely at the lives of children?

HART: Mainly, it came from a lack of trust that children could adequately inform adults -- there was a gross underestimation of their competence. Many social scientists believed kids wouldn't tell you the truth, when in fact I find it the other way around, that they're more likely to tell you the truth than adults.

IDEAS: How did the town react to you at the beginning?

HART: Incredibly openly -- it was extraordinary. One reason is that the school understood why my questions were important, and they took me in and gave me a room almost the size of a classroom. But with children, you know, school is not necessarily the best place. I didn't want be perceived as another teacher. So I hung out outside the school, on the school grounds, and let the children slowly come to me.

IDEAS: How did they respond?

HART: They seemed interested, but they were mainly interested in the fact that I was an adult who talked to them openly, and was willing to respond to their questions very fully. In fact, our first conversation was when some kids were trying to build grass forts in a field outside the school, and they were struggling with how to put a roof on, and they just wanted my help.

IDEAS: So they accepted you?

HART: There was one part of town where the kids so much understood what I was trying to do -- it was a gang of about nine children who lived on Main Street -- that they told me if I wanted to hang out with them, I had to take my shoes off in the summer like they did. I'm an Englishman, where children

or adults don't run around with their shoes off, so I was terribly nervous about it at first, but I got used to it, and they thought it was terrific that I went along with their plan.

IDEAS: And their parents?

HART: In those days, even the 5- and 6-year-olds would be playing outdoors unsupervised. So I would go around the town, talking with children outside their houses, and I didn't go bang on the door and say, "By the way, Mrs. Smith, I'm here now to talk to your child." I would just go, and they knew who I was, and they would look out the window and say, "Oh, that's Roger . . . He's kind of a Pied Piper, he's OK." That I can't imagine happening today.

IDEAS: What else has changed?

HART: Back then, there wasn't this tight intermeshing between parents' and children's lives. On weekends, especially Sundays, there would be greater locking in, but the rest of the time, children came home from school and went straight out.

IDEAS: And now?

HART: There was a question the children would jump to, this time, when I asked it, which was, "Tell me the times when you're just with other children, without adults organizing you." No one has ever asked them that before, but they immediately know the answer, and it's important to them. They'll say things like, "Oh, before football practice, when we're just hanging around, before we start, and then when we're on the school bus." So they know these settings where there's a chance for them to invent their activities with one another, and it's very rare.

IDEAS: How did they get so busy?

HART: There has been too much hype from psychologists in the last decade about how crucial it is to push children when they're young, and not many saying what they should be saying, which is that there are also benefits to children having free play.

IDEAS: Are the changes affecting the skills children develop?

HART: A sizable number of my parents say they're concerned their children are not as imaginative as they were, not as able to invent activities without the script being given to them. Parents say their kids often say to them, "What do I do now?" If the parents ask them to go outside and play, the kids say, "Come and play with me."

IDEAS: Are there any positive changes?

HART: There are. Almost all the parents feel closer to their children than their parents were to them. That's fascinating -- it's the flip side of children having less freedom.

IDEAS: Did you recognize their personalities, when you interviewed the children from your original study again as adults?

HART: Gosh, yes. So much so that I'll call them by their child name rather than their grown-up name, and it's a little embarrassing to them sometimes.

IDEAS: What do you hope will come of your work?

HART: My desire is, through the film and book, to encourage neighborhoods and towns to have intergenerational dialogue about how childhood has changed. The speed of change is so great, parents don't have a chance to discuss what they would like to offer their children.

IDEAS: What can be done?

HART: There are things we can do. Some parents [in Vermont] have decided they are concerned about the amount of time their children are indoors, and they're working with one another to create more free play opportunities. They've done that spontaneously, recently. Dozens of cities in Europe have declared themselves "child-friendly cities," even London, and they're working on slowing traffic in neighborhoods, so kids can start to play outside again.

Jenna Russell covers New England for the Globe. When she was growing up, she often played "ancient Egypt" in a neighbor's backyard. ■

http://www.boston.com/bostonglobe/ideas/articles/2008/01/20/sheltered_lives/

Scanner psych

Why the human brain is bad at screening baggage, and how video games might help

By Christopher Shea | November 18, 2007

Security screeners at airports might do a better job spotting weapons if they spent their downtime playing video games - specifically, wasting aliens in lurid first-person shooters like Halo 3.

That's just one of the tentative findings emerging from psychologists trying boost the human ability to find threatening objects in X-rayed luggage. The subfield, once tiny and obscure, has bloomed in recent years, spawning competing theories and rival labs - and now provocative suggestions about how airport security screening might be improved.

Though baggage screening might seem on the surface like a repetitive and uncomplicated job, it turns out to be devilishly hard. Even well-trained security officers have trouble spotting guns, knives, and plastic explosives amid the tsunami of hair dryers, socks, MP3 players, metal toys, and the occasional cured ham that flows by during a holiday week like this one.

A government report issued last week noted that agents were able to sneak fake bombs past security at 19 airports by creating minor distractions, including carrying a roll of coins to set off a metal detector. And a Transportation Security Administration document obtained by USA Today revealed that when investigators placed simulated explosives into bags at Los Angeles International Airport last year, human screeners missed three-quarters of them.

Since the 9/11 attacks, there's been a strong ray of attention - and a stream of money - focused on solving this problem. Any new solutions would have applications beyond transportation safety: in medicine, for example, radiologists have to find tumors in thousands of mammograms and other X-rays, and have a high failure rate. What psychologists are finding is that the human mind fails at such tasks in very specific ways - and that understanding and compensating for those failures can help as much as new technology.

"The screener folks often get a bum press," says Jeremy Wolfe, a professor of ophthalmology at Harvard Medical School who runs the Vision Attention Lab at Brigham and Women's Hospital. The lab has received $100,000-$150,000 annually from the Department of Homeland Security over the last

five years. "But I have seen very little evidence that they are anything other than professionals trying to do a very good job. And the people who are designing the task aren't stupid either - but it's really hard."

One reason it's hard is that the human brain has trouble with rare events. In 2005, Wolfe and two colleagues made news with a paper in the prestigious journal Nature that identified a "prevalence effect" in security screening. No matter how easy an object is to spot, they found, it is harder to spot if it is extremely uncommon. Wolfe and his colleagues found that people were much better at spotting objects that occurred half the time than in spotting the exact same object if it occurred only 1 in 50 times.

This may be a quirk of psychology with evolutionary roots, Wolfe suggests: If you were hunting prey it would make sense that your brain devote more attention to the species that comes along more often. But in the security scenario, where the most important threats occur very infrequently, it backfires.

In a paper now under review by the Journal of Experimental Psychology, Wolfe and his Brigham and Women's Hospital team offer one way around the perceptual glitch. If test subjects are "primed" for two minutes on tests in which knives and guns appear frequently, their high success rate continues when they switch over to a scenario in which the frequency drops. The priming effect lasts at least 20 minutes - probably long enough to get through a typical X-ray scanner shift. (Officers are rotated every half hour, to keep them from zoning out.) Josh Rubinstein, head of the "human factors" program at the Department of Homeland Security's Transportation Security Lab, says he hopes to field-test Wolfe's proposal in 2008.

Another reason baggage screening is hard is that people's visual acuity is stimulated when objects move (think hunting). Yet on an X-ray screen, the target objects are stationary against their background.

So Rubinstein's lab is working on modifying current X-ray machines to produce simulated motion. Images taken from slightly different angles can be presented in sequence, "animating" them enough to make screeners more effective at picking out the potential weapons. Based on the work of a British psychologist, Paul Evans of Nottingham Trent University, and amounting to an inexpensive tweak of old technology, the approach has been shown to improve threat detection by 15 percent, Rubinstein says.

The Halo 3 theory comes from a simple observation made by researchers at Duke University: frequent video-game players seem to be better at picking out threats quickly.

Stephen Mitroff, a Duke professor, and Mathias Fleck, a graduate student, had been following the burgeoning research on the effect of video games on all sorts of cognitive abilities. They compared the performance of gamers with nongamers, defining gamers as people who had spent at least five hours a week for the past six months playing "first-person shooters" - video games that show a world through the player's eyes, moving through a series of threat-filled hallways and landscapes. In one test of people's ability to identify low-frequency threats, gamers had an error rate of 15 percent, compared with 25 percent for nongamers.

The reason for the advantage was unclear, though gamers have obvious experience both in scanning a screen quickly for threats and in improving their visual detection in new arenas. This work has not yet been published, but is under consideration by the journal Psychonomic Bulletin and Review, and Fleck says it "could potentially shift hiring practices or training procedures." Rubinstein says his lab is keeping an eye on such studies, but there are no real-world tests planned.

Befitting a true academic field, security-screening studies now has its intramural squabbles. In the November issue of Psychological Science, Mitroff and Fleck argue that Wolfe's "prevalence" theory may be wrong. Mitroff and Fleck tried to replicate the low-prevalence effect, using a version of Wolfe's test, which had people try to pick tools out of an array of images on a computer screen. They

succeeded - sort of - but subjects reported knowing that they'd done poorly on the tests. "That alarmed me," Fleck says. "It's hard to call it a 'miss' if they tell me they know they missed it."

So Mitroff and Fleck added a new condition: After the subjects had rendered their judgment about a given screen, they were allowed to correct it. They hit the escape key and went back. Under those conditions, the prevalence effect went away: people were just as good at finding the rare items as the common ones. The researchers suggest that the "prevalence effect" wasn't a fundamental perceptual error, in other words, but rather that the hand was just quicker than the eye. Visual recognition did kick in, but a microsecond after the finger made the wrong call. In psychological jargon, this is known as the "Oh, shoot" effect.

Since security officers are already encouraged to stop conveyor belts, or even back them up for a second look at a bag, this would seem to cast doubt on whether "prevalence" could be a tool for improvement. Wolfe, for his part, takes issue with technical details of the Duke tests and stands by his original findings.

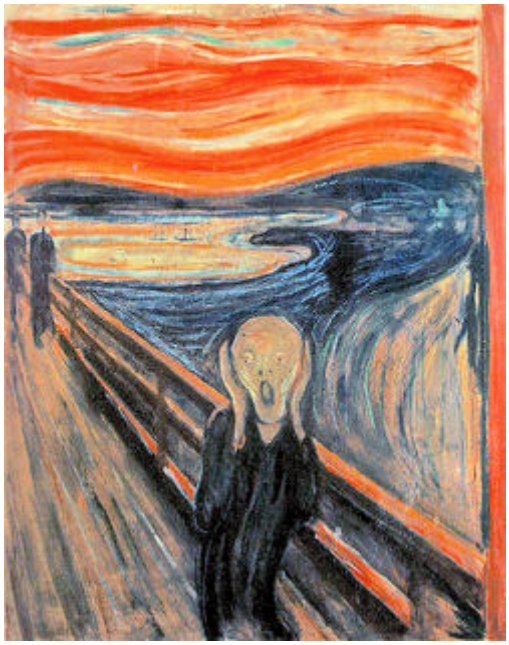
The Duke team, however, is now working on other intriguing failures of human observation, such as the "satisfaction of search" problem. This refers to the well-established human tendency to end a search after one potential problem has been identified. Radiologists who detect a problem spot on an X-ray, for example, have a notably high rate of failure in identifying a second problem spot if it appears on the same X-ray.

"I have totally experienced this in the airport. They will spot toothpaste and go right for that," Fleck says, "and I wonder if they would miss something else."

Christopher Shea's column appears regularly in Ideas. E-mail criticalfaculties@verizon.net. ■

Pentagon Explores 'Human Fear' Chemicals; Scare-Sensors, 'Contagious' Stress in the Works?
By David Hambling

American military researchers are working to uncover and harness the most terrifying chemical imaginable: that most primal odor, the scent of fear.



Pheromones are chemicals released by animals as signals to their own kind: for sex, for territorial marking, and more. They're often detected in the olfactory membranes. But there's more to pheromones than attraction. Many animals have an alarm pheromone which is used to signal danger; aphids, for example, use it to cause their fellow lice to flee.

Now, the US Army is trying to track down and harness people's smell of fear. The military has backed a study on the "Identification and Isolation of Human Alarm Pheromones," which "focused on the Preliminary Identification of Steroids of Interest in Human Fear Sweat." The so-called "skydiving protocol" was the researchers' method of choice.

The authors collected sweat, urine, blood, saliva, ECG, respiration, and self-report measures in 20 subjects (n=11 males and n=9 females) before, during, and immediately following their first-time tandem skydive, as well as before, during, and immediately following their running on a treadmill for the same period of time. Measurements between the test (skydive) and control (exercise) conditions were made on consecutive days, each experiment precisely matched to the minute between subjects and between conditions to prevent diurnal confounds. Emotional states were monitored using brief standardized questionnaires. For most of the observed compounds, men showed an increase in the compound emission during acute emotional stress, while women showed either no change or a decrease in emission of the compound.

In a lecture given at a 2007 Congress on Stress, the researchers hint at what their study found:

Our findings indicate that there may be a hidden biological component to human social dynamics, in which emotional stress is, quite literally, "contagious."

This work piggybacks on a 2002 study by the Ludwig-Boltzmann-Institute for Urban Ethology at the University of Vienna. Subjects wore underarm pads while watching a 'terrifying' film -- the horror movie Candyman -- or a 'neutral' documentary. Afterwards subjects were asked to try and distinguish between pads worn by people seeing each film. The results showed that they could -– though subjects thought the smell was aggression rather than fear.

Some have suggested that the human alarm pheromone could lead to chemical fear-sensors. The project Integrated System for Emotional State Recognition for the Enhancement of Human Performance and Detection of Criminal Intent (do they call it ISESREHPDCI for short?) specifically mentions the possibility of monitoring pheromone levels:

Such systems could be used to assess fitness for duty, integrated into closed loop systems regulating user vigilance and workload, or used to detect the sinister intent of individuals and prompt pre-emptive interdictions. These systems could unobtrusively monitor individuals within military operational environments or crowded civilian settings by relying on passive detection.

If they're trying to spot terrorists at an airport, it may not work: I know a number of people whose fear levels when approaching a flight would overload any fear sensor for miles. The suicide bombers are probably way calmer.

But what about offensive use? Pheromones are effective in minute quantities, so a wide area can be blanketed with just a few liters. Given sufficient concentration, would everyone exposed start suffering from an unidentifiable dread? The contagious aspect means that those affected would start churning out fear pheromone as well.

On its own, the alarm pheromone probably would not do much. But given an external trigger, such as a loud noise, it could influence people to start stampeding like spooked cattle. Then again, the bee alarm pheromone triggers attack rather than flight, and the Viennese study suggested something similar may apply to humans -- or are there multiple pheromones involved? Whatever is going on, this research is likely to uncover some novel and powerful ways of manipulating human behavior.

Some in the military research complex have been down this road before. Remember the so-called "Gay Bomb," that would make enemy combatants irresistibly attracted to one another? Speaking of which, all those web sites advertising pheromones to make you irresistible to the opposite sex haven't actually got many decent studies to back them up, a topic I explored in last month's *Fortean Times* magazine

http://blog.wired.com:80/defense/2008/01/pentagon-resear.html

Merce Cunningham, An Old Mentor's New Medium
By JULIE BLOOM

"O.K., position, ready and. ..."

Merce Cunningham was beginning his company class, as he does every Monday morning, in an 11th-floor studio at the Westbeth Building in the far West Village. Perched on a stool in a corner of a studio lighted only by the January sun, his arms gently resting on a ballet barre, Mr. Cunningham led the class of 25 dancers. Despite his frailty (he turns 89 in April), he was precise in his instructions. "Curve and tilt, not fast," he chided his dancers as they reverently followed his every direction.

This almost sacred ritual of class, previously experienced only by Cunningham dancers and selected guests, will soon be on view to anyone with an Internet connection and curiosity. Beginning next month the Merce Cunningham Dance Company will begin recording "Mondays With Merce," an online video program featuring weekly episodes of Mr. Cunningham's Monday class, on its Web site, merce.org. Financed in part by the Andrew W. Mellon Foundation, the Rockefeller Foundation and the Booth Ferris Foundation, and executed in collaboration with New York University, the program will also provide a glimpse into Mr. Cunningham's artistic process, allowing viewers to observe as he teaches, rehearses and even creates new works.

Trevor Carlson, the company's executive director, said the idea for the program was born two years ago, when the company was offered the opportunity to license a work to a group of students in Brazil and wanted Mr. Cunningham to be there. "Merce is not traveling as much with the company," Mr. Carlson said, "and I thought that there might be some way, given what we'd seen at some of the other venues we'd performed at, particularly Stanford University, that there might be a way to do a live feed." A feed was unfeasible at the time, but the idea led to "Mondays With Merce."

"The actual hope became: How can we take Merce outside our studio without actually having to take him out? How can we bring what he does here, what we do here, to the outside community?" Mr. Carlson said. "Prior to any physical limitation Merce has had in his older age, Merce has been most comfortable, and his dancers too, working in the studio that we have here. So we began looking to find a way to upgrade — update our studio to accommodate these ideas in the way that universities and colleges are able to."

The program has three major components. First, there will be 26 episodes online beginning in September. Each will include 30 to 40 minutes of technique class, edited and supplemented with interviews with Mr. Cunningham, collaborators like the artists Jasper Johns and Robert Rauschenberg amd some of the

original dancers from the pieces, and archival material. The episodes will show the inspiration for dances and reveal the threads that link one work to another.

"If the company is performing 'Ocean,' which is based on the circle," said Nancy Dalva, a dance historian who will be directing these edited episodes, "we can go get archival footage of 'Beach Birds,' which has the same circle in it, and show the same Matisse poster, which Merce saw in his dentist's office before he made the dance."

These episodes are "a way to bring the person at the other side of the computer to Westbeth," she said. "You see dance the way Merce makes it — without the music, without the costumes, before it goes to the theater — so you see the work as he envisioned it, very purely, and there's something very essential about that. It gives you a sense of the identity of the works, their structure, their rhythm, and the class material is very often material that is going into a new dance."

Second, the full 90-minute weekly classes will be available to universities and colleges by subscription, allowing them to invite Mr. Cunningham into any studio as a virtual instructor. The company eventually hopes to add a component allowing students to ask Mr. Cunningham questions at the end of the semester.

This part of the project "captures the complexity of Cunningham's approach not only in final performance but also in the process he uses to work," said Diane E. Ragsdale, an associate program officer of the Mellon Foundation, which provided $150,000 in grant money to the project over nine months. (The program was also an inaugural recipient of the Rockefeller Foundation's New York City Cultural Innovation Fund, with a $100,000 two-year grant.) "The company's long-term goal is to develop a strategy targeted to dance departments, colleges, libraries," Ms. Ragsdale said, "and we thought that was all very important."

The program's third component is preservation. Working closely with Howard Besser, director of the Moving Image, Archiving and Preservation Program in the Tisch School of the Arts at New York University, the company has decided to hand over all the digital recordings, edited and raw, to be archived by Bobst Library at N.Y.U. Mr. Besser and his department also plan to go through the company's video archives, dating back almost 60 years, and digitize that material as well.

One new challenge is "how do we together offer our own approved version of the material, so that we're not seeing things on YouTube that have been recorded on someone's cellphone from the back of the theater," Mr. Carlson said. "But rather we've got the actual footage here, and it's broadcast quality and something we really want you to see."

To make all this happen, the company is outfitting the Westbeth studio with new production equipment. Christopher Young, the studio's technical director, said the classes would be shot with four cameras: one concentrated solely on Mr. Cunningham, one giving a wide-angle view of the classroom, one spotlighting a specific dancer per class, and one from a static side angle to focus on details like feet. Two of these cameras will be stationary robotic cameras controlled from a small production area in the studio.

All the feeds will be edited together to create the episodes, with a new episode initially going up one week after it was recorded, and the unedited digital material will also be archived. Mr. Young also has to figure out the studio's lighting and sound needs without interrupting the artists.

Not all the dancers were comfortable at first with the cameras' invasion of their class space, said Andrea Weber, a company member. "The idea for 'Mondays' was uncomfortable just because class is always such a private affair," she said. "The fact that it's Monday was actually a very big deal because we're coming off the weekend."

The company recently negotiated a new union contract with the American Guild of Musical Artists to take into account dancers' rights in terms of media distribution. "We now have a media agreement with the union and the dancers which allows us the rights to broadcast this material," Mr. Carlson said.

The agreement, modeled on the Metropolitan Opera's broadcast contract with its artists and built into the regular contract, includes a media salary as well as additional payment for participation in "Mondays With Merce."

Ms. Weber, who is also a guild representative, agreed that the new-media agreement was an important tool for dealing with the realities of performing artists today. "I'm all for it," she said. "We all want to look good, and this takes care of us in that way.

"Merce's process of class is genius. To be able to educate people in that way — not only for other dancers, who are in that world and understand Merce, but just to educate people who might happen upon it — I think it's a great idea. I don't necessarily like the fact that everyone is going to find out I don't have great turn out, but I've come to terms with that."

For Mr. Cunningham — who has long used technology in innovative ways to enhance his choreography, from motion-capture technology to the use of DanceForms software, which allows him to visualize steps in 3-D images — these steps are just part of the natural advancement of the art form.

"I don't think it's anything that you control," he said after class. "I simply think that it's something bound to happen, so if one can facilitate it — do something that makes it clearer — that is good. I don't think, given the way people see now, in this enormously expanded way, you can say this shouldn't be done or it should be done, because it's going to be done one way or another."

Though technology offers new opportunities for viewers to see his work, Mr. Cunningham emphasized that his dancers come first. "I do what I do hoping it will help the people who are participating," he said. "It's not for onlookers. I don't have a basic objection to them, but it's not for them. It's for the people who are doing it."

http://www.nytimes.com/2008/01/20/arts/dance/20bloo.html?_r=1&oref=slogin

On Eloquence

By DENIS DONOGHUE

Eloquence is not the same as rhetoric. Eloquence isn't even a distant cousin of rhetoric — it comes from a different family and has different eyes, hair, and gait. Long thought to be a subset of rhetoric's devices, eloquence has declared its independence: It has no designs on readers or audiences. Its aim is pleasure; it thrives on freedom among the words. Unlike rhetoric, it has not sent any soldier to be killed in foreign countries.

I'd like to say how I came to this one beautiful idea.

In the first week of October 1946, I enrolled at University College Dublin to study for a B.A. in Latin and English, with Irish, history, and mathematics as subsidiary requirements. A few weeks later, I also contrived to become a student at the Royal Irish Academy of Music, taking lieder with Brian Boydell and harmony and counterpoint with Dorothy Stokes.

The courses in Latin were mainly occasions for construing Virgil's *Aeneid* and selected passages from Tacitus, Horace, and Ovid. Our English courses were prescribed by Professor Jeremiah J. Hogan, who held that we should read *Beowulf,* selections from *Sweet's Anglo-Saxon Reader in Prose and Verse,* Chaucer, Langland, Shakespeare, Jacobean drama, 17th-century prose, the 17th-century metaphysical poets, the first four books of *Paradise Lost* along with Milton's shorter poems, Pope's *Dunciad,* Burke on "Conciliation With the American Colonies," and Wordsworth's *The Prelude.* Literary theory was represented by Aristotle's *Poetics,* Wordsworth's prefaces, Coleridge's *Biographia Literaria,* Matthew Arnold's essays on poetry, and John Henry Newman's lectures on university education. Literature after Arnold was deemed to be, as C.S. Lewis supposedly said, "just books," to be looked into at leisure.

Students in my year at college were just as idle as students in the humanities normally are, but we were notably bookish. The more daring among us — aspiring poets and men of letters John Montague, Anthony Cronin, John Jordan — were on gregarious terms with the established writers in Dublin — Patrick Kavanagh, Flann O'Brien, Brendan Behan, and, more distantly, Austin Clarke, Sean O'Faolain, and Frank O'Connor — but I lived a modest life, mostly in the National Library on Kildare Street and the Academy of Music in Westland Row. I was alert to the fact that there were a few cult books that we expected one another to know by heart, including *At Swim-Two-Birds* and *Three Men in a Boat.*

Citations from these took the place of conventional greetings. Precocious students would call to each other across a crowded Grafton Street: "Thou hast committed fornication"; and a loud reply was supposed to come: "But that was in another country, and besides, the wench is dead." Not that we had read *The Jew of Malta,* the source of that exchange — we had read Marlowe's *Dr. Faustus,* but not *The Jew* — but we knew that bit of dialogue because T.S. Eliot had used it as an epigraph to his *Portrait of a Lady.* Adepts of insult would regularly intone to a friend: "Thou hast nor youth nor age, but as it were an after dinner sleep, dreaming of both" — again one of Eliot's epigraphs, this one from his poem "Gerontion." But I soon exempted myself from such theatricalities, especially when I started finding my social life among the young musicians.

It is my impression, at this long remove, that the teaching of English at University College Dublin did not pay much deference to historical and political conditions. We knew nothing of sex or gender. (But we knew what Empire meant. Ireland was still in part a British colony.) As students, we were content to think that one piece of writing differed from another because of differences of genre and style: nuances of tragedy, comedy, epic, lyric, and so forth. The few textbooks I have retained show the high points of style marked for special attention, to be quoted in examinations to show off one's prowess. Occasionally I underlined a word or a phrase or two to be committed to memory.

A few contexts have stayed in my mind. "You are a spirit, I know. When did you die?" is Lear's answer to Cordelia's "Sir, do you know me?" in Act IV, Scene 7. "Cover your face; mine eyes dazzle; she died young" is Ferdinand to Bosola on the strangled Duchess of Malfi. "Wid was his parish, and

houses fer asunder" is Chaucer's Poor Parson. "Crist was a maide and shapen as a man" is the Wife of Bath brushing chastity aside. *Radix malorum est cupiditas* is Chaucer's greedy Pardoner rejecting greed. Sidney's *Defense of Poesy* gives the only such defense I have ever felt in need of: "Only the poet, disdaining to be tied to any such subjection, lifted up with the vigor of his own invention, doth grow in effect another nature, in making things either better than nature bringeth forth, or, quite anew, forms such as never were in nature, as the Heroes, Demigods, Cyclops, Chimeras, Furies, and such like."

Many contexts have receded. I am content to see them go, leaving behind only their eloquence. "Then shall the fall further the flight in me" is from George Herbert, but I cannot name the poem. "Love without end, and without measure Grace" is somewhere in *Paradise Lost.* "'Tis too late to be ambitious," as Sir Thomas Browne said. "That mine own precipice I go" is my choice line from Marvell, again from a poem I have otherwise forgotten. "Christ, that my love were in my arms,/And I in my bed again" is perennial poetry, exempt from contextual limitation. "The words of the Lord are pure words: as silver tried in a furnace of earth, purified seven times" is from a psalm, which one I forget. "Love is the fire, and sighs the smoke; the ashes shame and scorns" is the only line I recall from Southwell's "The Burning Babe." "From you have I been absent in the spring" is from a minor sonnet of Shakespeare's, not minor to me. "There is in God (some say)/A deep, but dazzling darkness" is from Vaughan's "The Night," which I can't further recite.

These and other contextless lines have become especially dear to me in recent years because they have urged me to love my sole idea. Normally, eloquence is taken to be one of rhetoric's flashier tricks. It is not. I want to release it from that servile employment and have it enjoy its independence as a play of language, gratuitous, a grace note in the culture that permits it. Can I be accused, then, of reading literature as music? Will someone read my thoughts and snort: "It's all words, words, words — he's still in Dublin, singing lieder with Brian Boydell." I hope not. But will I lose sleep on hearing the snort? No, not really. I will be shaken, but not as a leaf.

Denis Donoghue is a University Professor and a professor of English at New York University, and author, most recently, of On Eloquence, *published this month by Yale University Press.*

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Section: The Chronicle Review
Volume 54, Issue 19, Page B28

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China's Internet growth speeding up

By Jonathan Landreth

Jan 19, 2008

BEIJIJNG -- After a year of massive growth, China is kicking off its Olympic year with 210 million Internet users, just 5 million behind the U.S. and its title of world's largest Internet market.

The China Internet Network Information Center said in a report released Thursday that, in 2007, China's number of Internet users shot up 53% from the 137 million counted at the end of 2006. At the end of June, that number stood at 162 million. About 16% of the Chinese population now has access to the Internet. The global average is 19%, the report said.

China's rapid Internet growth poses many problems -- commercial, political and social. On Thursday, a senior government official told state media that despite repeated crackdowns on online piracy, China still faces a challenge to protect intellectual property rights.

"Internet copyright infringement is still very prevalent in the country," Yan Xiaohong, vice-minister of the National Copyright Administration told official news agency Xinhua.

Yan attributed the situation to the rapid development of the Internet industry and light punishment for violators and pledged to work more closely with both the justice and telecommunications authorities to curb infringements. The CNNIC report showed that China has 1.5 million Web sites, up 78% year-to-year.

China is said to employ tens of thousands of Internet police to monitor Web sites for content objectionable to the Communist Party, such as pornography, political dissent or non-approved religions.

Last year, China began sending male and female animated police officers across Web sites nationwide to remind surfers that their Web access is monitored. The cartoon officials began regular patrols of China's top 13 portal sites every half-hour from Sept. 1. Authorities closed down 62,600 illegal Web sites during 2007.

Liu Yunshan, head of the publicity department of the party's Central Committee, told a national teleconference that "unswerving efforts should be made to protect intellectual property rights and to fight various illegal publications so as to maintain a sound cultural environment." China is under increased pressure from world governments to clamp down on piracy. On Thursday in Washington, U.S. Trade Representative Susan Schwab, in remarks to the U.S. Chamber of Commerce, reiterated America's reliance on the World Trade Organization to help it fight China's failure to crack down on piracy and solve other trade disputes brought to the WTO last year.

"We fully expect the WTO to begin handing down decisions early this year that vindicate our claims in the remaining three cases -- auto parts, intellectual property rights enforcement and market access," Schwab said.

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Behold! An Operatic Miracle
By JESSE GREEN

NASHVILLE

ON a cold Saturday afternoon in November, Robert Aldridge and Herschel Garfein held court in the vaulted marble lobby of the Hermitage Hotel here, dispensing bons mots and refreshments with abandon. A Brownie troop practicing Southern charm over tea nearby kept glancing toward them in awe. Who were these great men seated before the fire, broadly gesturing and accepting homage in plus-size wingback chairs?

If someone had explained that Mr. Aldridge and Mr. Garfein were the composer and librettist of an opera that had enjoyed a successful premiere the night before, the picture would have made sense. With his leonine mane and snowy beard, Mr. Aldridge looks his part as much as Mr. Garfein, all sharp eyes and bronze locks, looks his. And the public unveiling of their “Elmer Gantry,” produced by Nashville Opera along with the Peak Performances series at Montclair State University in New Jersey, had gone off beautifully, complete with ovations, Champagne toasts and excellent reviews. (“ ‘Elmer Gantry’ stirs soul, provokes thought” was the headline in that morning’s Tennessean.) The fledgling work even had legs, if short ones. After two more Nashville performances, it would move to Montclair for another four, which start on Wednesday.

No wonder the mood was expansive. The opera itself was an intoxicating experience: a new American work that set out to honor both its source material (the great Sinclair Lewis satire of evangelism) and its new medium. Intoxicating too was a drink the hotel had named in its honor; by the end of the day 68 Elmer Gantrys (Woodford Reserve Kentucky bourbon, shaken with ice and strained) had been poured, at $12 a pop. But someone — it turned out to be Mr. Aldridge’s father, a Presbyterian minister — had to pay for this extravagance, as someone always does.

So don’t tell the Brownies, but this portrait of the artists as a latter-day Verdi and Boito, all confident prosperity amid samovars and Gilded Age splendor, was something of a fraud. For its authors it had been a money pit filled with bad luck, horrible road trips, hat-in-hand humiliations, hubris and its antidote. The Hermitage itself was a last-fling indulgence: one weekend of luxury after 17 years of Red Roof Inns at best. Seventeen years? In the time it took to get the opera produced, Mr. Garfein, now 50, married and

had twins; Mr. Aldridge, 53, and his wife had a daughter now old enough to be cast in a small singing role. And though their story of development hell is extreme, it's characteristic of the genre.

If critics often bemoan the state of the pipeline that delivers new works for the American theater, at least there is a pipeline. Opera has more of a pipette, or a tear duct: only a trickle emerges, and only after prolonged suffering. With production costs for new works so extreme — the seven performances of "Elmer Gantry" will cost its presenters $700,000 — and success so unlikely, few companies will risk a commission on anyone short of a star composer like Wynton Marsalis or John Corigliano. And without a commission you might as well be a peddler of luxury goods in a poorhouse.

Records kept by Opera America, the service organization for the field, tell the story. During the 2007-8 season, major United States opera houses will offer 370 productions of some 150 works; the Top 25 titles, all European war horses, represent more than half of what will be seen. The most frequently produced American works — "Porgy and Bess," "Amahl and the Night Visitors," even musicals like "West Side Story" — are mere blips by comparison, and are also, with few exceptions, more than 50 years old. Newer American operas account for less than 5 percent of the season: David DiChiera's "Cyrano" with three productions; Carlisle Floyd's "Cold Sassy Tree" with two; and a dozen others, including "Elmer Gantry," just making it onto the charts with one.

Worse, as Marc Scorca, the president of Opera America, pointed out, few new works, once they have their debuts, get produced much thereafter. (It's easier to market a world premiere than a third production.) Among American operas of the last 25 years, only "Little Women," "Nixon in China," "Dead Man Walking," "Margaret Garner" and a handful of others are getting enough secondary play to suggest they'll stay in the public ear. This is a danger for opera companies already scrambling to attract younger audiences: "No industry can connect to its public without having new product," Mr. Scorca said. But it is even worse for composers and librettists. With production opportunities so freakishly limited, why would anyone, especially artists of ambition, write an opera?

For Mr. Aldridge and Mr. Garfein, colleagues from the Boston contemporary-music scene of the 1980s, it began with a rare instrument and a ripe story. The instrument was Lorraine Hunt, a brilliant mezzo-soprano who was Mr. Garfein's girlfriend at the time. After a Christmas dinner in 1990, Mr. Aldridge invited the couple to watch the movie of "Elmer Gantry," which he felt had the makings of a great opera. Though Mr. Garfein was himself a composer, he agreed to write a libretto for Mr. Aldridge if he could also direct any production that resulted. And Ms. Hunt agreed to play the charismatic Sharon Falconer, a figure Lewis had based on Aimee Semple McPherson.

If they had found in Lewis's portrait of faith (both real and sham) a theme that suited the time, it also suited them. Watching his father's work, Mr. Aldridge had seen firsthand the successes and excesses of belief. Mr. Garfein, raised Jewish in Los Angeles — his father, the director Jack Garfein, had survived the Holocaust, and his mother, the actress Carroll Baker, had survived Hollywood — also understood the contradictions of religion in America. He'd had a ritual purification at the beach: a Malibu mikvah.

But "Elmer Gantry" offered more than thematic relevance; it was a work large enough to focus their large ambitions. Like many artists associated with the Composers in Red Sneakers collective, they disliked the academic bent of recent music, with its emotional parsimony and off-putting airs. Opera especially had lost its ability to speak to Americans with American diction, and "most of it wouldn't pass muster dramatically in a fourth-grade play," Mr. Garfein said. Bursting with opportunities for hymns, barroom choruses and gospel clap-alongs, "Elmer Gantry" could be a corrective to all that: an accessible song-based score but with the big plot and un-self-conscious emotion of grand opera.

If anything, "Elmer Gantry" offered too big a plot, which Mr. Garfein whittled to one major story: Elmer's relationship with Sharon. He gives us Elmer as a godless lunk willing to manipulate faith for personal advantage and then gives us his real conversion in the face of Sharon's purity. How the two characters influence each other, for better and worse, is the drama.

"We wanted to show how evangelism moves from frontier to city by taking on the techniques of American business," Mr. Garfein explained dryly. He might also have said they were showing how ambition enables and then pollutes faith.

Their own ambition did not meet any obstacles at first. Though the producers of a flop 1970 Broadway musical starring Rita Moreno (the big number was called "We're Sharin' Sharon") still controlled the dramatic rights, agents for the Lewis estate were willing to carve out a "limited permission" for the opera, including the condition that it not include one word of spoken dialogue. Research trips to mountain revival meetings and churches in 1991 and 1992 — during which Mr. Garfein called himself Curtis Grayson so as not to attract attention as a Jew — uncovered a wealth of musical information about the genres they were hoping to mimic and transform.

The writing too went smoothly. With Ms. Hunt's intensities in mind, they quickly produced Sharon's stunning entrance aria, which remains unchanged in the score today. On the strength of her recording of it, and the baritone Vernon Hartman's rendition of a number for Elmer, Boston Lyric Opera, in conjunction with the Boston Music Theater Project, agreed to put on a workshop production of the first act in February 1992.

Even with just a piano, the workshop was a huge success. Richard Dyer, in The Boston Globe, called it the "most effective music-theater of the season so far" and "competitive with the best in any other season within memory." But the success brought with it the hubris that would plague the opera for the next decade. When Boston Lyric offered to finance a full production, the authors shockingly demurred.

"I can take part of the blame," Mr. Garfein explained. "I told Bob and the others, 'We're on the verge of writing the great American opera, and it's too ambitions and complicated to produce without having another workshop first.' "

Though Boston Lyric agreed to the demand, and the authors were able to raise $75,000 in grants to produce it lavishly, the 1994 presentation was nearly the end of the line for "Elmer Gantry." A few months later, despite what Mr. Garfein called "an explicit agreement" to move forward, Boston Lyric announced it was dropping the production, citing "financial rather than artistic" reasons.

What had happened? For one thing, the reviews this time were less effusive. The opera was now so long — about four and a half hours — and so stuffed with vernacular music that people were calling it "Hymnzapoppin'." Mr. Garfein's complete control over the project began to look like a mistake to some, though his direction itself was universally praised. Perhaps most crucially, Ms. Hunt, who before her death in 2006 would become world famous under the name Lorraine Hunt Lieberson, had "elected not to continue with the piece," as Mr. Garfein put it. That is, she and Mr. Garfein had broken up.

Or perhaps it was something simpler. "We thought Boston Lyric was incompetent, and they thought we were arrogant," Mr. Garfein said. "And we were both right."

Writing an opera requires a certain amount of arrogance, and putting one on takes at least enough incompetence to cause producers to risk financial suicide. It's tempting to say that the system as it now exists is designed to frustrate both qualities in favor of safe mediocrity, except that the system has no design at all.

In any case, once "Elmer Gantry" fell into the hole, almost nothing could pull it out. Not that Mr. Garfein and Mr. Aldridge didn't try. During several road trips over the next few years they peddled their wares to every opera executive they could bribe with fancy lunches, paid for from "those dark recesses of our bank accounts that our wives never look at," as Mr. Garfein put it. When they weren't preceded by their reputation, they could alienate potential sponsors impromptu. "It took you 50 years to do 'Porgy and Bess,' " Mr. Aldridge told a representative of the Metropolitan Opera, suggesting that the company had missed the boat in not championing that classic. "I hope it doesn't take you as long to do ours."

But “Elmer Gantry” is about nothing if not the indomitability of faith, and after several years of quiescence, everything changed one day in 2003 at Opera America’s New Works Showcase in St. Louis. John Hoomes, the artistic director of Nashville Opera, attended. “Usually you listen to 10 minutes from five or six new pieces, with a piano and a girl screaming way above the staff,” he said. “Often she is a prostitute.” But “Elmer Gantry” was different, he added, as were its authors; when he approached them afterward to say he wanted to produce their opera, they simply could not understand what he meant.

Four years later Mr. Aldridge and Mr. Garfein were hoisting Elmer Gantrys in the Hermitage lobby. Thanks to lessons learned grudgingly but applied smartly along the way, the opera that Mr. Hoomes directed in Nashville was one-third shorter, rather more emotional — and just plain better, they admitted — than it had been in Boston. It didn’t hurt that after seeing the production, opera companies in Columbus, Ohio; Milwaukee; Cleveland; Louisville, Ky.; and Houston had all expressed interest in scheduling the work.

But it will take a lot to compensate for the agony — and expense — of getting there. The Excel spreadsheet on which the two men tallied what they’d personally forked out for “Elmer Gantry” (more than $41,000) and what they’d made on it (about $7,000 once the Nashville royalties arrived) should be required reading in composition programs and opera boardrooms. It’s enough to stop new operas from ever being written.

And yet, somehow, it didn’t stop Mr. Aldridge and Mr. Garfein. Mr. Garfein is in fact partway through an adaptation of Tom Stoppard’s “Rosencrantz and Guildenstern Are Dead” though he refuses to finish it until he gets a commission. Would he do “Elmer Gantry” differently now?

“So many of the missteps and failures contributed to our making valuable changes,” he said. “Had we rushed to have it performed, the piece would never have gotten to where it is.

“On the other hand, we might have written two more operas. And they would have been great.”

http://www.nytimes.com/2008/01/20/arts/music/20gree.html

Thumbs Race as Japan's Best Sellers Go Cellular
By NORIMITSU ONISHI

TOKYO — Until recently, cellphone novels — composed on phone keypads by young women wielding dexterous thumbs and read by fans on their tiny screens — had been dismissed in Japan as a subgenre unworthy of the country that gave the world its first novel, "The Tale of Genji," a millennium ago. Then last month, the year-end best-seller tally showed that cellphone novels, republished in book form, have not only infiltrated the mainstream but have come to dominate it.

Of last year's 10 best-selling novels, five were originally cellphone novels, mostly love stories written in the short sentences characteristic of text messaging but containing little of the plotting or character development found in traditional novels. What is more, the top three spots were occupied by first-time cellphone novelists, touching off debates in the news media and blogosphere.

"Will cellphone novels kill 'the author'?" a famous literary journal, Bungaku-kai, asked on the cover of its January issue. Fans praised the novels as a new literary genre created and consumed by a generation whose reading habits had consisted mostly of manga, or comic books. Critics said the dominance of cellphone novels, with their poor literary quality, would hasten the decline of Japanese literature.

Whatever their literary talents, cellphone novelists are racking up the kind of sales that most more experienced, traditional novelists can only dream of.

One such star, a 21-year-old woman named Rin, wrote "If You" over a six-month stretch during her senior year in high school. While commuting to her part-time job or whenever she found a free moment, she tapped out passages on her cellphone and uploaded them on a popular Web site for would-be authors.

After cellphone readers voted her novel No. 1 in one ranking, her story of the tragic love between two childhood friends was turned into a 142-page hardcover book last year. It sold 400,000 copies and became the No. 5 best-selling novel of 2007, according to a closely watched list by Tohan, a major book distributor.

"My mother didn't even know that I was writing a novel," said Rin, who, like many cellphone novelists, goes by only one name. "So at first when I told her, well, I'm coming out with a novel, she was like, what? She didn't believe it until it came out and appeared in bookstores."

The cellphone novel was born in 2000 after a home-page-making Web site, Maho no i-rando, realized that many users were writing novels on their blogs; it tinkered with its software to allow users to upload works in progress and readers to comment, creating the serialized cellphone novel. But the number of users uploading novels began booming only two to three years ago, and the number of novels listed on the site reached one million last month, according to Maho no i-rando.

The boom appeared to have been fueled by a development having nothing to do with culture or novels but by cellphone companies' decision to offer unlimited transmission of packet data, like text-messaging, as part of flat monthly rates. The largest provider, Docomo, began offering this service in mid-2004.

"Their cellphone bills were easily reaching $1,000, so many people experienced what they called 'packet death,' and you wouldn't hear from them for a while," said Shigeru Matsushima, an editor who oversees the book uploading site at Starts Publishing, a leader in republishing cellphone novels.

The affordability of cellphones coincided with the coming of age of a generation of Japanese for whom cellphones, more than personal computers, had been an integral part of their lives since junior high school. So they read the novels on their cellphones, even though the same Web sites were also accessible by computer. They punched out text messages with their thumbs with blinding speed, and used expressions and emoticons, like smilies and musical notes, whose nuances were lost on anyone over the age of 25.

"It's not that they had a desire to write and that the cellphone happened to be there," said Chiaki Ishihara, an expert in Japanese literature at Waseda University who has studied cellphone novels. "Instead, in the course of exchanging e-mail, this tool called the cellphone instilled in them a desire to write."

Indeed, many cellphone novelists had never written fiction before, and many of their readers had never read novels before, according to publishers.

The writers are not paid for their work online, no many how many millions of times it is viewed. The payoff, if any, comes when the novels are reproduced and sold as traditional books. Readers have free access to the Web sites that carry the novels, or pay at most $1 to $2 a month, but the sites make most of their money from advertising.

Critics say the novels owe a lot to a genre devoured by the young: comic books. In cellphone novels, characters tend to be undeveloped and descriptions thin, while paragraphs are often fragments and consist of dialogue.

"Traditionally, Japanese would depict a scene emotionally, like 'The train came out of the long tunnel into the snow country,' " Mika Naito, a novelist, said, referring to the famous opening sentence of Yasunari Kawabata's "Snow Country."

"In cellphone novels, you don't need that," said Ms. Naito, 36, who recently began writing cellphone novels at the urging of her publisher. "If you limit it to a certain place, readers won't be able to feel a sense of familiarity."

Written in the first person, many cellphone novels read like diaries. Almost all the authors are young women delving into affairs of the heart, spiritual descendants, perhaps, of Shikibu Murasaki, the 11th-century royal lady-in-waiting who wrote "The Tale of Genji."

"Love Sky," a debut novel by a young woman named Mika, was read by 20 million people on cellphones or on computers, according to Maho no i-rando, where it was first uploaded. A tear-jerker featuring adolescent sex, rape, pregnancy and a fatal disease — the genre's sine qua non — the novel nevertheless captured the young generation's attitude, its verbal tics and the cellphone's omnipresence. Republished in book form, it became the No. 1 selling novel last year and was made into a movie.

Given the cellphone novels' domination of the mainstream, critics no longer dismiss them, though some say they should be classified with comic books or popular music.

Rin said ordinary novels left members of her generation cold.

"They don't read works by professional writers because their sentences are too difficult to understand, their expressions are intentionally wordy, and the stories are not familiar to them," she said. "On other hand, I understand how older Japanese don't want to recognize these as novels. The paragraphs and the sentences are too simple, the stories are too predictable. But I'd like cellphone novels to be recognized as a genre."

As the genre's popularity leads more people to write cellphone novels, though, an existential question has arisen: can a work be called a cellphone novel if it is not composed on a cellphone, but on a computer or, inconceivably, in longhand?

"When a work is written on a computer, the nuance of the number of lines is different, and the rhythm is different from writing on a cellphone," said Keiko Kanematsu, an editor at Goma Books, a publisher of cellphone novels. "Some hard-core fans wouldn't consider that a cellphone novel."

Still, others say the genre is not defined by the writing tool.

Ms. Naito, the novelist, says she writes on a computer and sends the text to her phone, with which she rearranges her work. Unlike the first-time cellphone novelists in their teens or early 20s, she says she is more comfortable writing on a computer.

But at least one member of the cellphone generation has made the switch to computers. A year ago, one of Starts Publishing's young stars, Chaco, gave up her phone even though she could compose much faster with it by tapping with her thumb.

"Because of writing on the cellphone, her nail had cut into the flesh and became bloodied," said Mr. Matsushima of Starts.

"Since she's switched to a computer," he added, "her vocabulary's gotten richer and her sentences have also grown longer."

http://www.nytimes.com/2008/01/20/world/asia/20japan.html?em&ex=1200978000&en=9275f067f59eb69c&ei=5087%0A

Children's books: 'If children are to become readers for life, they must first love stories'

Last Updated: 12:01am GMT 19/01/2008

To introduce our guide to the best children's books, author Michael Morpurgo sets out the case for reading pleasure

We are in a muddle about literacy. We worry endlessly that children in Britain are not becoming readers. Report after report reveals that we are slipping further and further behind in child literacy levels when compared with other countries. Interesting that Finland finds itself at the top of a recent child happiness table as well as child literacy levels. More of Finland and happiness later.

Stimulates the deductive organs: The Hound of the Baskervilles is an ideal introduction to Holmes

I'm thinking that education itself is in part to blame. Ironically, it may be responsible both for the great blossoming of our literature, and at the same time for leaving so many with the impression that literature is not for them, but the preserve of a certain educated elite. As a consequence, much of our society has become separated from its own stories. This alienation can happen all too easily. Let me tell you a story.

There was once a boy brought up with books all around him. There were no walls in the house: just books, it seemed. At bedtime his mother would sit on the bed and read to him - Masefield, Kipling, Lear, De la Mare, Shakespeare - and the boy loved it because his mother loved it. He could hear it in her voice, in her laugh, in the tears in her eyes. He loved the fun, shared the sadness. He loved the music in the words. He never wanted storytime to end.

Then "unwillingly to school" he went, trudging the leafy pavements through pea-souper London smogs. From then on the stories were not magical, and they weren't musical either. Words were to be properly spelled, properly punctuated, with neat handwriting. They were not story words any more, but nouns and pronouns and verbs. Later they were used for dictation and comprehension, and all was tested and marked. A multitude of red crosses and slashes covered his exercise books, like bloody cuts.

A fear of words, a fear of failure, banished all the fun, all the magic. Every day more words died, until the evening this boy was taken to see Paul Schofield play Hamlet at the Phoenix Theatre, in London. He heard the music in the poetry and loved it again.

And then as a student at university he had a professor who sat on the corner of his desk and read Gawain and the Green Knight. As the professor read it he lived every word, loved every word. So did the student.

Later, as a teacher in a primary school, the young man would read stories to his class at the end of the day, but only stories he loved. When he ran out of these, he made up stories of his own, and he became a story-maker and a writer. Now he cannot imagine a life without stories, reading them, making them.

After many years of teaching and writing he knows the difference stories can make to children's lives, and he has some ideas about how to renew the old association between ourselves and stories.

Our mindset has to change. We have to stop proclaiming reading as a ladder to academic success. Treated simply as an educational commodity, some kind of pill to be taken to aid intellectual development, it is all too often counter-productive and ultimately alienating.

Of course we must and should study literature in our schools, but first we have to imbue our children with a love of stories.

And to do that, parents and teachers have to have a passion for stories themselves: they have to pass it on. The children have to know that you mean it, you feel it, you love it. And a teacher needs to find the space - correction, the Government needs to give them the space in the curriculum - so that she or he can read stories to the children for at least half an hour a day.

Our teachers need the chance at college or university to come to know and love books. Let us train our teachers, not blame them. We have to unchain them, and trust them. It's the tests and the targets that inhibit them, that bring fear into the classroom when children are too young to cope with it.

In Finland they do things differently. Finnish children stay at home much longer. They play and tell stories years after ours are sitting down in school to a target-driven curriculum. Maybe that's partly why Finnish children are happier, and maybe that's why they rate higher in the literacy stakes. Maybe they haven't put the cart before the horse as we do. They give their children the time and space to grow up with stories, to enjoy them, so that the association develops slowly, organically, is not imposed.

We get ourselves all hot and bothered about the teaching of reading, about synthetic phonics and the like, and we forget that none of it is much use unless children want to read in the first place. The motivation must come first, horse before cart. We all know that unless a child is motivated to learn, then there will be apathy or resistance in the learning process. They are much more likely to want to deal with the difficulties of learning to read if they know it is these words that give them access to all these wonderful stories. If we really want our children to become readers for life, we would do well to remember that horses are much more fun than carts anyway.

100 books every child should read - Part 1: Early years

Last Updated: 12:01am GMT 19/01/2008

The Twits, by Roald Dahl
(Puffin, £4·99)

Mr and Mrs Twit pass the time playing nasty tricks on one another. They're both horrid. In his hairy beard, Mr Twit "was always able to find a tasty morsel to nibble on".

Sendak's paintings sing and his text is a joy: the classic Where the Wild Things Are

Burglar Bill, by Janet and Allan Ahlberg
(Puffin, £4·99)

"I'll 'ave that," is the catchphrase of the rogue who stars in this engaging and beautifully illustrated tale. When Bill accidentally burglarises a baby, it turns out to be a blessing in a stolen basket. "Runfrit, Boglaboll!"

The Tiger Who Came To Tea, by Judith Kerr
(HarperCollins, £5·99)

Newsnight's Emily Maitlis has a theory that this book is an allegory about sex. Most children understand it as the story of a tiger that eats its hosts out of house and home. Debate continues.

advertisement

Where the Wild Things Are, by Maurice Sendak
(Red Fox, £5·99)

When Max engages in mischief, he is sent to bed without his supper. That's just the start. Sendak's paintings sing, and the text is a joy.

The Tale of Samuel Whiskers, by Beatrix Potter
(Frederick Warne, £4.99)

Tom Kitten learnt nothing from his parents about the consequences of curiosity. Abducted by a psychotic rat, he comes within a whisker of being turned into a pudding. Nightmares guaranteed.

Yertle the Turtle, by Dr Seuss
(Collins, £4·99)

Theodor Geisel's response to Hitler was more oblique than Stauffenberg's, but as effective. Yertle, king of the pond, commands all the turtles to stack themselves up so he can be top of the heap. Someone's riding for a fall.

Fungus the Bogeyman, by Raymond Briggs
(Puffin, £5·99)

What boy won't thrill to the world of the Bogeymen, all snot, armpits and boils? This gave Raymond Briggs's green crayon the workout of its life.

The Story of the Little Mole Who Knew It Was None Of His Business, by Werner Holzwarth and Wolf Erlbruch
(Chrysalis, £4·99)

A big show-off, but he knows how to have fun: Dr Seuss's The Cat in the Hat

Someone's dropping lands on poor mole's head. Who's the culprit? A farmyard investigation is conducted with Germanic seriousness. Mole's revenge is sweet.

Room on the Broom, by Julia Donaldson
(Macmillan, £4·99)

Punchier than The Gruffalo, this has children chanting along as a witch and her animal friends see off a dragon in search of "witch and chips".

The Very Hungry Caterpillar, by Eric Carle
(Puffin, £5·99)

"In the light of the moon, a little egg lay on a leaf…" so begins this classic board book, its pages drilled with holes as the caterpillar eats his way through the week.

The Cat in the Hat, by Dr Seuss
(Colins, £4·99)

"Look at me! Look at me! Look at me now!" The cat's a big show-off, but he knows how to have fun, and his chaotic antics delight.

Charlotte's Web, by EB White
(Puffin, £5·99)

White's 1952 masterpiece describes the friendship between a lonely pig and a talented spider. This poignant tale teaches lessons about love, death and differing life expectancies.

The Story of Babar, by Jean de Brunhoff
(Egmont, £5·99)

When Babar sees his mother shot he reacts as any modern child might: a few tears, then off on a shopping spree. Nice green suit, though.

Winnie-the-Pooh, by AA Milne, illustrated by EH Shepard
(Egmont, £11·99)

Visit Hundred Acre Wood, and meet Pooh, Piglet and Christopher Robin, based on AA Milne's son. This classic story hasn't aged, and EH Shepard's understated illustrations remain the best.

100 books every child should read - Part 2: Middle years

Imaginative: Howl's Moving Castle by Diana Wynne Jones

Stig of the Dump, by Clive King
(Puffin, £6·99)

When Barney falls down a dump the last thing he expects is to meet a cave boy. Stig was an eco-warrior before the term was invented. Sprightly, comic, classic.

Ballet Shoes, by Noel Streatfeild
(Puffin, £5·99)

Adopted sisters Posy, Pauline and Petrova Fossil train as a dancer, an actor and an aeroplane pilot. A bally treat.

advertisement

Howl's Moving Castle, by Diana Wynne Jones
(HarperCollins, £5·99)

The Witch of Waste puts Sophie under a spell. To break it, she must brave the castle of the Wizard Howl. Imaginative and terribly funny.

Just So Stories, by Rudyard Kipling
(Walker, £9·99)

Learn how the leopard got his spots and the camel his hump. And remember "The Elephant's Child" - whose "satiable suriosity" turns his "bulgy nose" into a trunk?

The Borrowers, by Mary Norton
(Puffin, £6·99)

First published in 1953, this remains a deserved favourite. The Clock family live beneath a floorboard, making do with what "human beans" drop, until one day one of them allows herself to be seen…

Struwwelpeter, by Heinrich Hoffman
(Dover, £6·99)

These pungent 1840 morality tales are not to be taken literally: in one, a boy gets his thumbs chopped off.

The Magic Faraway Tree, by Enid Blyton
(Egmont, £5·99)

Jo, Bessie and Fanny climb to the top of a magical tree, above which are endlessly circulating worlds: the Land of Birthdays, or, more unluckily, of Dame Slap.

Danny, the Champion of the World, by Roald Dahl
(Puffin, £5·99)

Danny and his hard-up father bond over poaching pheasants from nasty Mr Hazell's land - before moral dues are paid.

George's Marvellous Medicine, by Roald Dahl
(Puffin, £4·99)

To cure his grumpy grandmother, George Kranky concocts a medicine from shaving foam, sheep dip, engine oil and brown paint. Granny grows huge. The ending is dark even for Dahl.

Underwater Adventure, by Willard Price
(Red Fox, £4·99)

First comic, then moving: When the Wind Blows

Tintin in Tibet, by Hergé
(Mammoth, £6·99)

After Tintin reads of a plane crash in the Himalayas, he dreams his friend Chang has survived. Uniquely, there are no villains - just a tender yeti and acres of snow.

The Complete Brothers Grimm Fairy Tales
(Chronicle, £11·99)

Sourced from medieval German folktales by Jakob and Wilhelm Grimm in the 19th century, these sanguinary stories deal with abduction, cannibalism and worse.

Erik the Viking, by Terry Jones, illustrated by Michael Foreman
(Puffin, £5·99)

Erik tells his wife that he must go to "the land where the sun goes at night"; off he travels on an atmospheric adventure, terrifically illustrated.

When the Wind Blows, by Raymond Briggs
(Penguin, £7·99)

Jim and Hilda Bloggs's preparation for a nuclear attack remains enthralling. First comic, then moving.

Old Possum's Book of Practical Cats, by TS Eliot
(Faber & Faber, £4·99)

This delightful collection of verse sees cat-loving Eliot capering about with his trousers rolled. A perfect introduction to the pleasures of poetry for children.

The Iron Man, by Ted Hughes
(Faber & Faber, £4·99)

Since it appeared in 1968, the late Poet Laureate's children's book has become a classic. Benign iron bloke falls from sky, battles space-bat-angel-dragon, saves world. Bliss.

The Owl and the Pussycat, by Edward Lear
(Corgi, £5·99)

Edward Lear's bizarre story of inter-species elopement and gastronomic adventure still charms and diverts. Runcible.

The Wind in the Willows, by Kenneth Grahame
(Egmont, £5·99)

"Believe me, my young friend, there is nothing - absolutely nothing - half so much worth doing as simply messing about in boats." But reading about Mole, Ratty, Toad and Badger runs it a close second.

The Worst Witch Collection, by Jill Murphy
(Puffin, £16·99)

Before Harry Potter there was Mildred Hubble, the worst witch at Miss Cackle's Academy for Witches. A tale of flying broomsticks, rivalries and magical pedagogy.

Peter Pan, by JM Barrie
(Puffin, £4·99)

JM Barrie's Neverland adventures were first performed as a play, and later turned into a novel. Clap your hands if you believe.

Mr Majeika, by Humphrey Carpenter
(Puffin, £4·99)

Mr Majeika, with his tuft of hair, is ever ready to cast spells on unruly pupils - most notably Hamish Bigmore, whose rudeness gets him changed into a frog. Charming and funny in equal measure.

Clap your hands if you believe: Peter Pan

The Water Babies, by Charles Kinglsey
(Wordswoth, £1·99)

Tom the sweep drowns after being chased from a rich household and falls into a sub-aquatic purgatory. But once he proves his worth he is allowed wonderful adventures.

A Little Princess, by Frances Hodgson Burnett
(Wordsworth, £1·99)

Seven-year-old Sara Crewe is sent back from India to Miss Minchin's Seminary for Young Ladies in England, to discover she has lost her fortune to a swindler and her father to disease. A stirring tale. **I'm The King of the Castle, by Susan Hill**
(Penguin, £7·99)

A powerful and claustrophobic study of bullying, this has a real narrative grip and a frightening message. No reader remains untouched.

The Wave, by Morton Rhue
(Penguin, £5·99)

Teacher Ben Ross doesn't think his students understand what it was like to live in Nazi Germany, so he devises an experiment. A powerful story about the risks of conformism.

Pippi Longstocking, by Astrid Lindgren
(Oxford, £14·99)

Pippi is impulsive, irrepressible, red-haired and so strong you won't believe it. Her bizzare adventures delight children and confound health and safety.

Charlie and the Chocolate Factory, by Roald Dahl
(Puffin, £5·99)

Charlie Bucket's adventures in Willy Wonka's factory - the chocolate rivers, the minia-tuarisation room, the Oompa Loompas - will live for ever.

Bambert's Book of Missing Stories, by Reinhardt Jung
(Egmont, £4 ·99)

Shy Bambert sends his half-written stories into the world attached to balloons for whoever finds them to finish. Stories come back from all over the world, and the final story is heartbreaking.

The Firework-maker's Daughter, by Philip Pullman
(Corgi, £4·99)

Lila's father doesn't want her to follow his career in fireworks so she must prove herself on an epic quest that takes in dragons and pirates.

Tom's Midnight Garden, by Philippa Pearce
(Oxford, £5·99)

As Tom lies in bed preparing for the most boring holiday of his life, the clock strikes 13. Racing downstairs he sees daylight and a beautiful garden where there should be darkness. Incredibly exciting.

The Phantom Tollbooth, by Norton Juster
(HarperCollins, £5·99)

A bored young boy pushes his toy car through a toy tollbooth, and finds himself in the kingdom of Wisdom. Genius wordplay, slapstick and a real sense of fun.

The Silver Sword, by Ian Serrallier
(Red Fox, £4·99)

Just after the Second World War, a group of children navigate war-torn Europe armed with little more than a letter opener. Tense, demanding and adult.

Cue for Treason, by Geoffrey Trease
(Puffin, £5·99)

After Peter Brownrigg chucks a stone at his landlord, he has to flee to London. Here he meets Shakespeare and uncovers a plot to kill Queen Elizabeth. Tudor derring-do.

The Sword in the Stone, by TH White
(HarperCollins, £6·99)

The trials of Arthur have never been more amusingly described. Merlin is the archetype for all dotty wizards.

A Wizard of Earthsea, by Ursula K LeGuin
(Puffin, £5·99)

LeGuin's fantasy lands are scrupulously realised, but it is emotional complexity that makes her books so engrossing. Here a young wizard has to come to terms with the destructive power of his magic.

Harry Potter and the Prisoner of Azkaban, by JK Rowling
(Bloomsbury, £5·99)

The third book may be the best in JK Rowling's series. All the usual Potter tricks are here, but the highlight is the Dementors, the terrifying guards of Azkaban prison.

The Chronicles of Narnia Box Set, by CS Lewis
(Collins, £49·99)

The Lion, the Witch and the Wardrobe isn't the only Narnia story worth reading. The Silver Chair is a powerful allegory of mental slavery; and Voyage of the Dawn Treader sees a talking mouse paddle over the edge of the world.

His Dark Materials Box Set, by Philip Pullman
(Scholastic, £22)

Pullman's riposte to CS Lewis is a trumpet-blast against dogma - but, above all else, a gripping adventure.

The BFG, by Roald Dahl
(Puffin, £5·99)

At the witching hour, a giant blows sweet dreams into children's bedrooms. When orphan Sophie sees him one night, he takes her to his cave. Beware whizzpoppers!

Swallows and Amazons, by Arthur Ransome
(Red Fox, £7·99)

Childcare used to be a bit less hands on ("Better drowned than duffers. If not duffers won't drown") and one cannot read the adventures of these four children in a lost Eden without a lump in the throat.

Clarice Bean, Don't Look Now, by Lauren Child
(Orchard Books, £7·99)

At first glance one for the girls, but boys should read it too. Over the series Clarice has matured from an infant with a quirky vocabulary into a complex, engaging teenager.

The Railway Children, by E Nesbit
(Oxford, £8)

When their father is accused of treason, Bobbie, Peter, Phyllis and their mother move to the country. They pass the time watching trains go by and proving their father innocent, which is nice.

The Selfish Giant, by Oscar Wilde
(Puffin, £5·99)

Wilde's giant wants to keep children out of his garden so that he can have it to himself. But it stays shrouded in snow until one day, when the giant's hard heart is softened by one of the boys…

Black Beauty, by Anna Sewell
(Puffin Classics, £4.99)

One of the greatest books ever narrated by a horse, with a fine message: be kind to animals, and they'll be kind to you.

Just William, by Richmal Crompton
(Macmillan, £5·99)

The classic naughty schoolboy, William wages a gentle war of attrition against parental and teacherly authority.

Jennings Goes to School, by Anthony Buckeridge
(House of Stratus, £6.99)

Catapults, grazed knees, and mischief of the best sort. Hogwarts may have revived our appetite for boys-school stories, but Jennings was there first.

Comet in Moominland, by Tove Jansson
(Puffin, £4·99)

Moomin is a peculiar fellow, but through him and his equally peculiar friends the Finnish author Tove Jansson explores the big issues: friendship, alienation, fear, loss and meteors from outer space.

The Bad Beginning, by Lemony Snicket
(Egmont Books, £6·99)

This magnificently black-hearted book introduced us to the Baudelaire children, orphaned in a fire and trying to keep one step ahead of the predatory Count Olaf, who is after their inherited fortune

100 books every child should read - Part 3: Early teens

Romola Garai as Cassandra in the film of I Capture the Castle

Call of the Wild, by Jack London
(Puffin, £4·99)

Jack London introduced some dark themes into this story of Buck, a sled dog in the Yukon who rediscovers his wild nature when put to the test.

Alice in Wonderland and Through the Looking Glass, by Lewis Carroll
(Penguin Classics, £5·99)

Never was mathematical and philosophical playfulness given such entertaining shape. Tenniel's line-drawings crown these classics.

advertisement

The Outsiders, by SE Hinton
(Puffin Classics, £6·99)

This powerful novel about school gangs was published when SE Hinton was just 18. The Greasers and the Socs clash in typical teenage fashion - but then someone dies.

I Capture the Castle, by Dodie Smith
(Vintage, £6·99)

Smith is better known for A Hundred and One Dalmatians, but although this, her first novel, is quieter, it shines brighter. Narrated in diary form by 17-year-old Cassandra, it documents the lives of her eccentric family.

The Wolves of Willoughby Chase, by Joan Aiken
(Red Fox, £4·99)

1832, and wolves have over-run a fictional kingdom of England. Orphans Sylvia and Bonnie fall into the hands of an evil Miss Slycarp and must use all their wits to escape. A mercilessly shadowy thriller.

To Kill a Mockingbird, by Harper Lee
(Arrow Books, £6·99)

A classic story of America's Deep South. Scout and Jem see their father, Atticus, defend Tom Robinson - an innocent black man - from the charge of rape. Atticus is inspiring without being priggish.

Great Expectations, by Charles Dickens
(Penguin, £7·99)

The rousing story of Pip's rise, fall and rise pips Oliver Twist as the best book with which to start reading Dickens, purely on account of his description of being in love.

The Owl Service, by Alan Garner
(Collins, £5·99)

Welsh myths, a portrait hidden behind a plaster skim, adolescent yearnings…read this extraordinary confection at the right age and it will never leave you.

The Hound of the Baskervilles, by Arthur Conan Doyle
(Penguin classics, £5·99)

Holmes in fine Gothic form: rackety aristocrats, the Grimpen Mire, and a glow-in-the-dark hellhound conspire to chill the blood and thrill the deductive organs.

Wuthering Heights, by Emily Bronte
(Penguin, £7·99)

A novel that embeds itself in the memory, and set feminism back 150 years. The human genome has yet to produce a teenage girl who isn't a sucker for Heathcliff.

The Diary of a Young Girl, by Anne Frank
(Penguin, £7·99)

On June 12, 1942, Annelies Marie Frank started writing a diary. It was her 13th birthday. She died three years later in Belsen. An ordinary teenage life, made poignant by the knowledge of how it ended.

Roll of Thunder, Hear my Cry, by Mildred D Taylor
(Puffin, £5·99)

A tale of oppression in the American South, this tells the story of the Logans, a black family living in rural Mississippi during the 1930s.

A Kestrel for a Knave, by Barry Hines
(Penguin, £7·99)

Filmed by Ken Loach as Kes, this snapshot of deprivation in 1960s Yorkshire describes a troubled boy's relationship with his pet kestrel. Bittersweet and grimly artful.

The Hobbit, by JRR Tolkien
(HarperCollins, £6·99)

A wonderful curtain-raiser for The Lord of the Rings, The Hobbit finds Tolkein in a playful mood. The adventures of Bilbo Baggins, while never less than exciting, are spiked with gentle humour.

War Horse, by Michael Morpurgo
(Egmont, £4·99)

Michael Morpurgo's moving story plunges into the horror of the First World War by following the story of Joey, a cavalry officer's horse on the Western Front.

Beowulf, by Michael Morpurgo
(Walker Books, £7·99)

Beowulf is a great story: scary monsters, fearsome matriarchs, boasting, singing, feasting, fighting and booty. Michael Morpurgo's rendition brings it to a new generation.

King Solomon's Mines, by H Rider Haggard
(Penguin Classics, £7·99)

Hunter Allan Quatermain searches the African jungle. Its attitudes might be outdated but this is still terrifically exciting.

Kim, by Rudyard Kipling
(Penguin Classics, £7·99)

Kimball O'Hara, the orphaned son of an Irish soldier, wanders Lahore cadging, playing and living a carefree life - until he's forced into espionage.

An ordinary teenage life, made poignant by how it ended: Anne Frank with her sister Margot

The Road of Bones, by Anne Fine
(Corgi Children's, £5·99)

Anne Fine weaves a disturbing parable of life in a totalitarian state, as young Yuri learns the cost of speaking the truth.

Frenchman's Creek, by Daphne Du Maurier
(Virago Press, £7·99)

A swashbuckling love affair between a lady and a pirate on the Cornish coast. Romantic adventure at its overblown best.

Treasure Island, by RL Stevenson
(Penguin Classics, £7·99)

The riddles of Stevenson's tale endure. Why does X mark the spot? What is it with parrots? And why did Pugh go blind?

Little Women, by Louisa May Alcott
(Oxford Children's Classic, £6·99)

The tale of four sisters - Jo, Meg, Beth and Amy - growing up in the US Civil War, this is a charming and insightful story of childhood and family.

Anne of Green Gables, by L M Montgomery
(Puffin Classics, £4·99)

Spirited ginger-nut, adopted in error for a boy, comes of age on a remote island off the Canadian coast.

Junk, by Melvin Burgess
(Puffin, £4·99)

Burgess's refusal to patronise teenagers has earned much praise. This tough, clear-eyed story of heroin addiction is among his best.

Cider With Rosie, by Laurie Lee
(Vintage Classics, £7·99)

A lyrical description of a childhood spent in rural bliss in the Cotswolds. This is a homage to England as it was, filled with light, joy, and fun.

The Go-Between by LP Hartley
(Penguin Modern Classics, £8·99)

More than a famous first line. When 60-year-old Leo Colston looks back on his youth in 1900, the nostalgia is stifling. But as the story develops, it takes a darker turn.

The Rattle Bag, ed by Seamus Heaney and Ted Hughes
(Faber, £14·99)

This rich anthology of poetry - whose name aptly describes the higgledy-piggledy mix of glories within - is something no teen's bookshelf should lack.

The Song of Hiawatha, by H W Longfellow
(Dover, £3)

Just say something in this rhythm. It will sound like Hiawatha. Read it to your horrid children. Hear them chant the verses loudly. On it goes ad infinitum. Heaven help the hapless parent.

Watership Down, by Richard Adams
(Puffin, £6·99)

Fiver and his brother Hazel know that something terrible will happen to the warren, and set off for safety. Their story has implications beyond the usual concerns of rabbits.

The Adventures of Tom Sawyer, by Mark Twain
(Oxford, £6·99)

Less ambitious than The Adventures of Huckleberry Finn but just as exciting. The language is hard to begin with but the hero is one of the most endearing in literature.

True Grit, by Charles Portis
(Bloomsbury, £6·99)

Mattie Ross - spirited, witty, probably beautiful - is out to avenge her "father's blood" in this slim Western. It should be given to every girl turning 16.

Holes, by Louis Sachar
(Collins, 7·99)

Sentenced to dig holes in the desert for stealing trainers, the wrongly convicted Stanley discovers that the holes are not so pointless as at first thought. Wit dry as a salt flat.

Lord of the Flies, by William Golding
(Faber & Faber, £7·99)

When a gang of boys are marooned on an island they try to set up a community based on cooperation. Some hope.

My Family and Other Animals, by Gerald Durrell
(Puffin, £5·99)

When the Durrell family takes a villa in Corfu one summer they do not imagine staying five years, but so they do. In that time Gerald, a boy of 10, discovers the joys of the local flora and fauna, and describes it with a delightful wit.

Coraline, by Neil Gaiman
(Bloomsbury, £6·99)

This spooky story won't soon be forgotten. Coraline is a girl who finds her way down a corridor to a flat just like her own - but slightly different. And where her doting "other mother" has buttons for eyes…

Carrie's War, by Nina Bawden
(Puffin, £6·99)

Carrie and her brother are wartime evacuees billeted on a bullying Welsh grocer. A wonderfully crafted novel full of memorable characters.

The Story of Tracy Beaker, by Jacqueline Wilson
(Corgi, £5·99)

A slice of life in a children's home narrated by 10-year-old Tracy, through whose eyes we confront tough dilemmas. Required reading.

The Lantern Bearers, by Rosemary Sutcliffe
(Oxford, £6·99)

As the Roman army prepares to leave for home, Aquila is forced to desert to protect his family.

http://www.telegraph.co.uk:80/arts/main.jhtml?xml=/arts/2008/01/19/bokidsbooks119.xml