

Points of Interest

Anxiety and Alzheimer's

Mounting evidence indicates that chronic exposure to emotional stressors, such as anxiety or fear, can make a person more susceptible to Alzheimer's disease. The latest study comes from a team at the Salk Institute for Biological Studies in San Diego that replicated the body's reaction to mild stress by physically restraining mice for half an hour. The incident modified the tau protein, which gives neurons structural support, rendering it unable to fulfill its role. "This conversion is a key event in the development of Alzheimer's," says Robert A. Rissman, lead author of the study. After a single stress episode, tau morphed back into its original state within 90 minutes. When the team induced stress every day for two weeks, however, tau remained in its modified state long enough to allow the individual protein molecules to clump together. These protein heaps are the first step toward neurofibrillary tangles, one of the hallmarks associated with Alzheimer's disease.

Nicole Branan **Scientific American Mind** Volume 18, Number 5, October/November 2007, <http://www.sciam.com/article.cfm?id=anxiety-and-alzheimers>

Searching for God in the Brain

Using functional magnetic resonance imaging and other tools of modern neuroscience, researchers are attempting to pin down what happens in the brain when people experience mystical awakenings during prayer and meditation or during spontaneous utterances inspired by religious fervor. A new discipline with the warring titles "neurotheology" and "spiritual neuroscience" not only might reconcile religion and science but also might help point to ways of eliciting pleasurable otherworldly feelings in people who do not have them or who cannot summon them at will. Some researchers speculate that the ability to induce them artificially could transform people's lives by making them happier, healthier and better able to concentrate.

David Biello
Scientific American Mind October 2007
<http://www.sciam.com/article.cfm?id=searching-for-god-in-the-brain>



Holy \$#!%&! Researchers Say It's Good to Swear at Work!

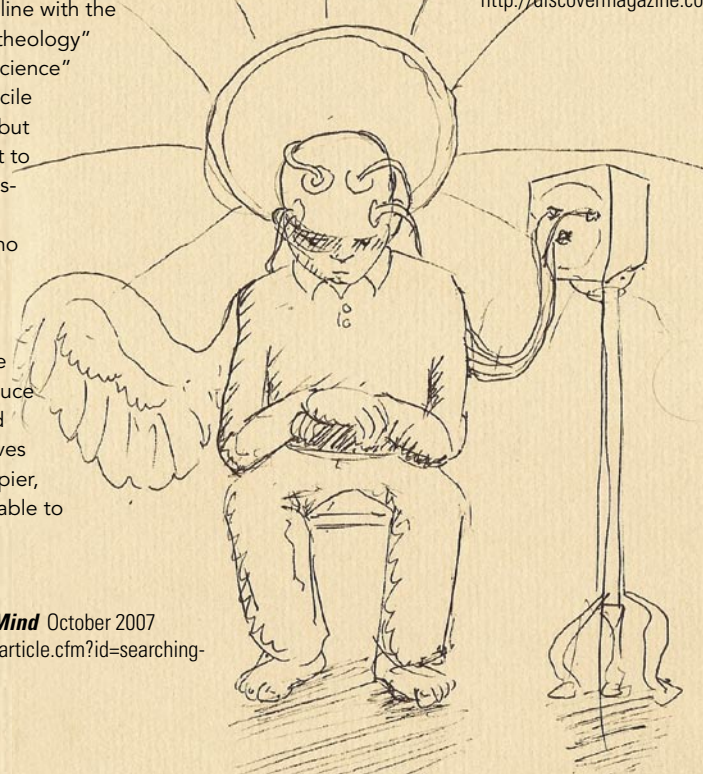
Profanity in the workplace may be considered taboo at most companies, but a new study shows that office expletives might actually help boost morale. Swearing can help develop and maintain solidarity among workers, as well as relieve stress, according to the study conducted by researchers at the University of East Anglia, based in Norwich, England.

Matt Finkelstein **Inc.com** October 19, 2007
<http://www.inc.com/news/articles/200710/swearing.html>

Climate Change Triggers Bloodshed

David Zhang of the University of Hong Kong and his colleagues studied historical records of the 899 wars that took place between the years 1000 and 1911 in densely populated eastern China. They compared these records with climate data for the same period and found that during warm periods, populations increased, but the conditions brought on by cold phases—shorter growing seasons, less land available for cultivation, a shortage of forage for domestic animals and lower agricultural yields—could not sustain these increased populations. The shortages fuelled peasant unrest, which destabilized regimes. Nearly all of China's dynastic changes took place during the cold spells.

Josie Glausiúsz **Discover** October 2007
<http://discovermagazine.com/2007/oct/climate-change-triggers-bloodshed>



Thinking Makes It So: Science Extends Reach of Prosthetic Arms

Todd A. Kuiken, MD, PhD, a physiatrist at the Rehabilitation Institute of Chicago and professor at Northwestern University, has pioneered a technique known as targeted muscle reinnervation, which allows a prosthetic arm to respond directly to the brain's signals, making it much easier to use than traditional motorized prosthetics. This technique, still under development, allows wearers to open and close their artificial hands and bend and straighten their artificial elbows nearly as naturally as their own hands and arms.

Science Daily November 12, 2007
<http://www.sciencedaily.com/releases/2007/11/071111182522.htm>

Vibrating Mice May Hold Obesity Clue

A short stint on a vibrating platform might slow the development of fat cells in mice by nearly 20%, according to controversial new research. Scientists say the experimental treatment seemed to stop the mice putting on weight from fat over the course of a four-month trial. But some experts voice concerns over the design of the experiment and are skeptical about its results.

Roxanne Khamsi **NewScientist** October 23, 2007
<http://www.newscientist.com/article/dn12823-vibrating-mice-may-hold-obesity-clue.html>



Paralyzed Man's Mind Is "Read"

Electrodes have been implanted in the brain of Eric Ramsay, who has been "locked in" – conscious but paralyzed – since a car crash eight years ago. These electrodes have been recording pulses in areas of the brain involved in speech. Now, *New Scientist* magazine reports, they are to use the signals he generates to drive speech software.

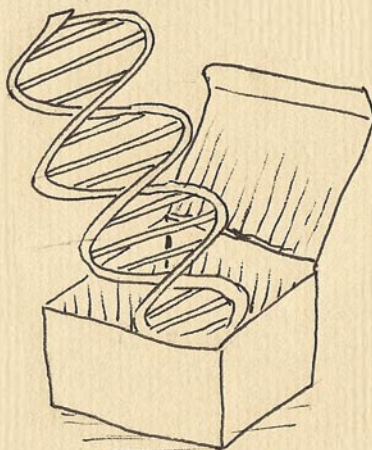
Although the data are still being analyzed, researchers at Boston University believe they can correctly identify the sound Mr. Ramsay's brain is imagining some 80% of the time. In the next few weeks, a computer will start the task of translating his thoughts into sounds.

BBC News November 15, 2007
<http://news.bbc.co.uk/2/hi/health/7094526.stm>

Canadian Scientists Use Nobel Prize–Winning Technique for Disease Research

The 2007 Nobel Prize for Medicine was awarded to Mario R. Capecchi, Oliver Smithies and Sir Martin J. Evans for their discoveries leading to gene targeting, a powerful technique used for manipulating mouse genes. Scientists involved with the North American Conditional Mouse Mutagenesis (www.norcomm.org) project are using high-throughput gene targeting for the creation of a knockout mouse library. Medical researchers then use this information to research any disease gene.

CNW Group
October 23, 2007
<http://www.newswire.ca/en/releases/archive/October2007/23/c7456.html>



Invention: Remote-Controlled Pills

The electronics company Philips has come up with a remote-controlled pill with a cavity for carrying a drug that can be opened by a remote signal. The passage of the pill can be followed by magnetic resonance imaging or ultrasonography and the drug dispensed with an electronic trigger at the appropriate location.

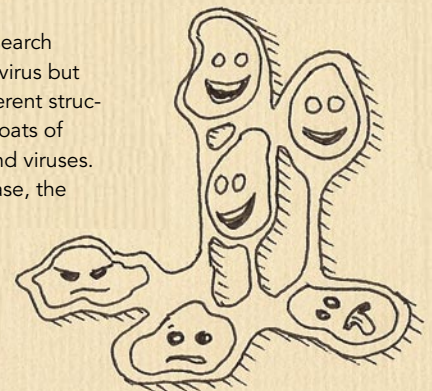
The drug can also be released according to other external factors, for example, if atmospheric pollen reaches a certain level or the patient's blood pressure hits a predetermined number.

Justin Mullins **NewScientist** November 19, 2007
<http://technology.newscientist.com/channel/tech/dn12934-patent-round-up-remotecontrolled-pills.html>

Lasers to Combat Acquired Immunodeficiency Syndrome

Research conducted by physicists from Arizona State University shows how pulses from an infrared laser can be fine-tuned to discriminate between problem micro-organisms and human cells. The research was based on putting femto-second (one billionth of one millionth of a second) laser pulses through a process that then produces lethal vibrations in the protein coat of micro-organisms. In doing so, the vibrations destroy the micro-organisms and thereby work to disinfect blood and treat blood-borne diseases.

The physicists involved in the research believe the treatment destroys the virus but not the human cells due to the different structural compositions on the protein coats of the human cells and the bacteria and viruses. Beyond being a treatment for disease, the technique may also be effective in reducing the spread of infections such as methicillin-resistant *Staphylococcus aureus* (MRSA) in hospitals.



Gizmag November 7, 2007
<http://www.gizmag.com/lasers-to-combat-aids/8304/>



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