

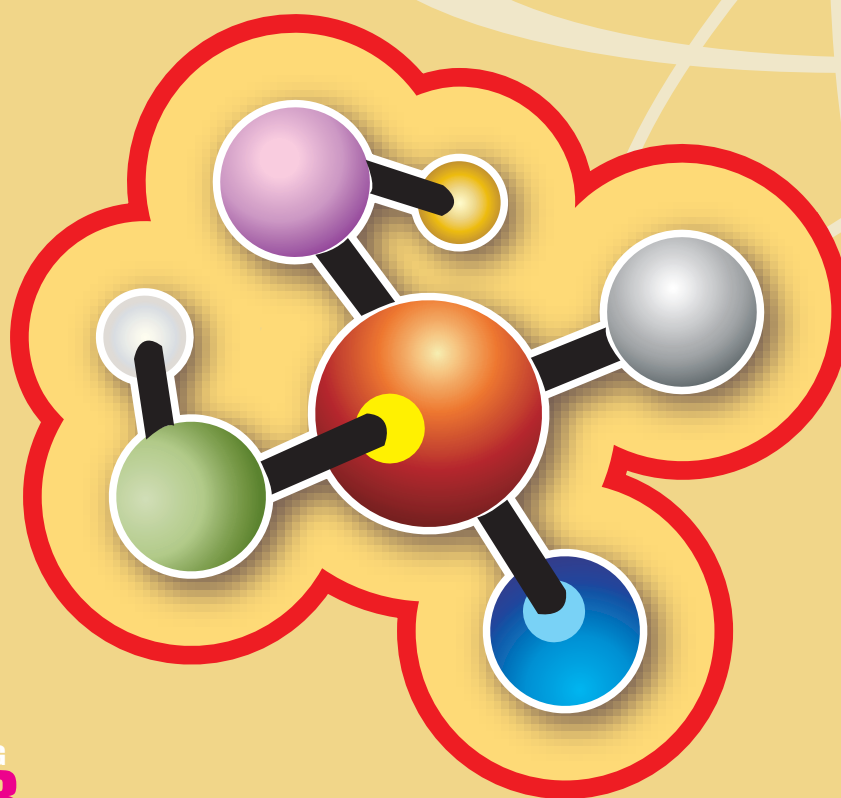


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60





October 1, 2008

Chauvinist Piggishness Pays

Men who believe that a woman's place is in the home make thousands of dollars per year more than their liberated counterparts. Karen Hopkin reports, with additional commentary by Christopher Hopkin

[The following is an exact transcript of this podcast.]

So I'm having dinner with my two-year-old son. When he clears his plate, he says to me, "Get in the kitchen. I want more." Get in the kitchen, I want more? I should have been appalled. But I'd just read a study published in the September issue of the *Journal of Applied Psychology*. In it, scientists from the University of Florida showed that men who hold a more traditional view of women in the workplace earn more than those who don't.

The scientists asked more than 10,000 men and women what they think about "a woman's place" at work and at home. And they compared the participants' earnings. Turns out that men who, like my toddler, feel that a woman's place is in the kitchen made an average of \$8,500 more a year than those who believe in equal pay for equal work. And women who believe in traditional gender roles make \$1,500 less than their liberated sisters.

For old fashioned gals, the smaller checks may be a self-fulfilling prophecy. As for the guys, maybe men whose wives stay at home can afford to be more aggressive in their pursuit of high-paying jobs. Either way, I hope my son keeps up the good work. Because he's gonna be supporting me when I retire.

—Karen Hopkin, assisted by Christopher Hopkin



October 2, 2008

Presidential Elections Up Car Crashes

A study of all presidential elections since 1976 finds that its more dangerous to drive on election days than even on New Year's Eve. Steve Mirsky reports

[The following is an exact transcript of this podcast.]

This presidential election will likely have a huge effect on health care. But it also will probably have a direct effect on public health. Because there's a higher risk of injury and death from traffic accidents on presidential election days. Thanks to more people driving, many of whom probably shouldn't be behind the wheel, and going to possibly unfamiliar destinations. That's according to a study in the October 1st issue of *The Journal of the American Medical Association*.

Researchers looked at all presidential elections starting in 1976 and compared them with the Tuesdays before and after election day. On average there were 24 additional car crash deaths and 800 extra, serious injuries nationwide on election days. The extra risk topped that seen on Super Bowl Sunday or even New Year's Eve. The risk to the individual also exceeded the potential of your one vote being pivotal. So it may actually make risk-benefit sense not to vote. Or at least to be extra careful when traveling on election day.

—Steve Mirsky



October 3, 2008

Brain Seeks Patterns Where None Exist

The brain will find patterns or images where none really exist. Relaxation exercises lowered the chances of finding a pattern that wasn't really there. Adam Hinterthuer reports

[The following is an exact transcript of this podcast.]

When we feel like we don't have command of our own fate, our brains often invent patterns that offer a sense of self-control. Some folks knock on wood or step over cracks in the sidewalk. Scientists call this illusory pattern perception. Work published in the October 3rd issue of the journal *Science* offers a look inside our heads as they try to make us feel less helpless.

Researchers from the University of Texas at Austin devised six experiments to test students' reactions to different situations of uncertainty. One experiment mimicked the stock market, while another asked students to search for images in television static. Time and again, students saw images where there were none and found stock patterns that didn't exist. The authors then asked students to perform self-affirmation exercises instead of looking for external design. These exercises calmed them and increased their capacity to see, well, reality. But if you're not changing your socks or shaving because it clearly helps your favorite team, go right ahead. Some unkempt fan in Tampa Bay has to be the reason behind the Rays winning the American League East.

—Adam Hinterthuer



October 6, 2008

Nobel Prize in Physiology or Medicine

Germany's Harald Zur Hausen and France's Luc Montagnier and Francoise Barre-Sinoussi share this year's Nobel Prize in Physiology or Medicine. The two French scientists discovered HIV, which quickly led to blood screening and treatments. The German showed that cervical cancer was caused by the human papilloma virus, paving the way to a vaccine. Steve Mirsky reports

[The following is an exact transcript of this podcast.]

Germany's Harald zur Hausen and France's Luc Montagnier and Francoise Barre-Sinoussi share the 2008 Nobel Prize in Physiology or Medicine, awarded October 6th.

Barre-Sinoussi and Montagnier discovered HIV. Shortly after reports in the early 1980s of a new immunodeficiency syndrome, researchers all over the world raced to find the cause. The two French scientists cultured cells from lymph nodes of patients. They first detected the enzyme reverse transcriptase, which meant that a retrovirus was active. Further searching turned up retroviral particles, which could kill white blood cells and which also reacted with antibodies from infected patients. These discoveries made possible unprecedented rapid development of blood screening techniques and of new antiviral therapies.

Zur Hausen defied the medical establishment and postulated in the 1970s that cervical cancer was caused by the human papilloma virus. He was able to isolate viral DNA in tumors. He also determined that there were multiple kinds of papilloma viruses, and that only some caused cancer. His discovery led to the development of a vaccine against cervical cancer.

—Steve Mirsky



October 7, 2008

Nobel Prize in Physics

Japan's Makato Kobayashi and Toshihide Maskawa share the Nobel Prize with American Yoichiro Nambu for work related to a fundamental description of nature at the subatomic particle level through what is known as broken symmetries. Steve Mirsky reports

[The following is an exact transcript of this podcast.]

The 2008 Nobel Prize in physics goes to an American and two Japanese scientists for work related to symmetry.

In the early 1960s, Yoichiro Nambu of the Enrico Fermi Institute in Chicago developed a mathematical description of what is known as spontaneous broken symmetry related to subatomic particles. The breaking of symmetry scrambles the underlying order of nature. Nambu's work was instrumental in some unscrambling, namely the later unification of three of the four basic forces—the weak force, strong force and electromagnetism.

The other laureates are Makato Kobayashi of the High Energy Accelerator Research Organization in Tsukuba, Japan, and Toshihide Maskawa of the Yukawa Institute for Theoretical Physics in Kyoto. They discovered different broken symmetries in the early 1970s, which predicted the existence of three kinds of quarks, which were later discovered. Their kind of broken symmetry is at the heart of the big bang. Full symmetry would have snuffed the Big Bang, but a tiny deviation of an extra matter particle for every 10 billion matter-antimatter particle pairs is apparently what allowed the universe to come into existence.

—Steve Mirsky



October 8, 2008

How Green Was the Nobel Prize in Chemistry

Japan's Osamu Shimomura and Americans Martin Chalfie and Roger Tsien share the Nobel Prize for the discovery and development of green fluorescent protein, GFP, which makes it possible to light up and see biological processes in cells and whole organisms. Steve Mirsky reports

[The following is an exact transcript of this podcast.]

The Nobel Prize in chemistry goes to three men who revolutionized molecular life science, Japan's Osamu Shimomura and Americans Martin Chalfie and Roger Tsien. They developing tools to light up and see individual proteins inside living cells. These tiny molecular flashlights make it possible to study numerous events that take place in cells and whole organisms that were previously invisible—such as the development of nerve cells or the spread of cancer cells.

In 1962 Shimomura, now emeritus professor at the Marine Biological Laboratory at Woods Hole, discovered that jellyfish produce a green fluorescent protein, GFP, that glows when exposed to ultraviolet light. Some 30 years later, Columbia University's Chalfie showed that the GFP gene could be put into any organism. By making sure the fluorescent protein was expressed at the same time as other proteins of interest, researchers could literally light up events they want to follow. Then Tsien, at the University of California, San Diego, engineered fluorescent proteins in various colors. The multicolor palette enables researchers to follow multiple biological processes at the same time.

—Steve Mirsky



October 9, 2008

Fish Vision Splits Species

Fish in Lake Victoria don't interact with certain other individuals because they literally can no longer see them. Karen Hopkin reports

[The following is an exact transcript of this podcast.]

They say that beauty is in the eye of the beholder. It turns out that maybe speciation is, too. Because a study in the October 2nd issue of *Nature* suggests that how fishes see one another can drive the formation of new species.

Scientists in the U.S. and Switzerland were studying the cichlids that live in African lakes. These fishes have evolved into a stunning variety of species—more than 500 of which live in Lake Victoria alone. The species differ in their behavior and coloration. For example, in some parts of the lake, blue-colored species tend to live in the shallows, and red ones near the bottom. That makes sense, because the deeper you go, the harder it is to see blue.

What the scientists found is that the blue fish that live in the shallow waters also tend to have visual pigments that are fine-tuned to see the color blue. And the red fish that live deeper can better see red. So, red females are more likely to mate with red males. And pretty soon you've got two species in which a female of one color won't even look at a male of another color. Because she can't see him. It's probably little consolation when she says "It's not you, it's me."

—Karen Hopkin



October 10, 2008

Bad Biodiversity Ups West Nile Odds

Low bird biodiversity areas tend to harbor those species most likely to carry and transmit West Nile virus. Adam Hinterthuer reports

[The following is an exact transcript of this podcast.]

If you're worried about news reports of West Nile virus, you might want to go take a census of the birds in your backyard. Because certain species of birds actually help the virus thrive. And they're not exactly exotic jungle fowl. In fact, they're our more familiar feathered friends.

Work on Lyme disease has shown how fragmented forests common around cities and towns are home to lots of white-footed mice, which carry that disease. Inspired by this look into the ecology of disease, researchers at Washington University turned their attention to West Nile virus. They analyzed mosquitoes around the St. Louis area and found that rural plots with robust populations of numerous bird species harbored fewer infected mosquitoes than more "citified" settings.

The typical urban or suburban backyard usually only holds a handful of bird species, like crows, grackles, house finches and robins. And those birds are rich reservoirs for West Nile virus. Which ups the odds that a mosquito stalking a suburbanite may have recently fed on a bird carrying the virus. It's another example of how human activities alter the environment in unexpected ways that can often come back to bite us.

—Adam Hinterthuer



October 13, 2008

Learning to Stay Calm

Pavlov-style training can make mice stay calm in the face of adversity. Karen Hopkin reports

[The following is an exact transcript of this podcast.]

We all know people who are completely unflappable, able to remain calm in the face of total calamity. Don't you just hate those people? Well, a new study in the October 9th issue of the journal *Neuron* suggests that with a little practice, you could become one of them. Because researchers led by Nobel laureate Eric Kandel have taught mice how to be less skittish—training that physically changes their brains.

A lot of scientists who study learning in animals make use of a kind of behavioral test that couples a sound [audio of a memorable sound] with a stimulus, such as a mild foot shock. Over time, the furry subjects figure out that the sound signals a coming shock. Kandel's team turned that test on its head by using a sound [audio of a memorable sound] to signal safety. Mice trained in these tests display less anxiety when they hear their safety signal.

This learned safety, the scientists found, works just as well as a drug like Prozac to keep mice calm in stressful situations, such as being tossed into a pool of water, which is the rodent equivalent of getting stuck in traffic. By studying how this training changes the brain, scientists might devise new ways to treat anxiety in people. So, next time you're stuck in traffic, just remember, [audio of same memorable sound].

—Karen Hopkin



October 14, 2008

Mussel Ride Waves with Genes Waves

Marine mussels brave their constantly changing environment by switching on and off genes so they can perform necessary life tasks when its best to do so. Karen Hopkin reports

[The following is an exact transcript of this podcast.]

Spending your life hanging out at the seaside might sound like easy livin'. But for marine mussels, a day at the shore is no walk on the beach. Clinging to a boulder in the intertidal zone, a mussel might find that the temperature of its environment changes 50 degrees in a matter of hours, depending on whether it's bathed in cool seawater or baking in the sun. To handle such challenges, mussels have evolved a sophisticated strategy for systematically turning on and off the genes they need to survive.

Scientists from the University of Southern California spent a few days sampling mussel beds just south of the Monterey Bay Aquarium. Every few hours, they collected the mussels' genetic material and spread it on a gene chip to figure out which genes were active, and when. To their surprise, they found that mussels coordinate their gene activity in waves, alternating between genes responsible for growing and genes responsible for eating. And the harsher the environment, the more pronounced the oscillations, results that appear in the October 9th issue of *Current Biology*. It's not yet clear what drives these gene cycles. But it seems that even mussels know that you gotta ride the wave if you want to avoid a wipeout.

—Karen Hopkin



October 15, 2008

Lather Up for Global Handwashing Day!

It's Global Handwashing Day, a worldwide effort to improve hygiene that can prevent disease. For example, that's not coal under a Newcastle man's fingernails. Adam Hinterthuer reports

[The following is an exact transcript of this podcast.]

October 15th is Global Handwashing Day. And public health officials are hoping to highlight hygiene concerns across the globe. One country that needs a hand with washing up is Britain. A new study has found that, in the Queen's England, the further north you go, the dirtier the hands.

Researchers from the London School of Hygiene and Tropical Medicine swabbed the hands of commuters at bus stops and train stations across the nation. And it turns out that a man from Newcastle is three times more likely to have fecal bacteria on his hands than a Londoner. Even more surprising, the study found that women weren't any cleaner. In fact, in three of the five cities they visited, researchers found that women had dirtier hands than men. In cosmopolitan London, for example, women were three times more likely than men to be harboring germs on their manicured hands.

The Dirty Hands Study, as it's being called, was commissioned to provide a sense of the handwashing behavior of different countries. The researchers say they were "flabbergasted" by Britain's results and warn that one case of diarrheal disease could lead to quite an outbreak. An Englishman's health, the study suggests, is in his own hands.

—Adam Hinterthuer



October 16, 2008

Elderly Web Surfers Benefit Brains

A study finds that when elderly Internet users surf the Web, they exercise brain regions responsible for reasoning and decision making. Adam Hinterthuer reports

[The following is an exact transcript of this podcast.]

Senior citizens across the world love keeping their brains busy with crossword puzzles, sudoku or word jumbles. These brain-teasers actually help keep neurons firing clearly and quickly. Now a new study has a prescription for the Internet age. According to a paper to be released in an upcoming issue of the *American Journal of Geriatric Psychiatry*, surfing the web can improve brain function in older adults.

Neuroscientists at U.C.L.A. scanned the brains of two dozen 55- to 74-year-old volunteers as they both read and searched the web. Both activities sent blood rushing to the areas of the brain that control memory and language. However, when using the Internet, brain regions that deal with complex reasoning and decision-making also lit up. And the effect was more pronounced the more internet savvy the surfer was: older adults with more Internet experience under their belts got twice the brain benefit of web rookies when going online. The researchers say their study points to ways of designing software that can keep older folks' brains brisk. Just what you needed, grandma and grandpa ROTFLOLing.

—Adam Hinterthuer



October 17, 2008

Life Origin Experiment Gets Better with Age

A reanalysis of Stanley Miller's classic 1953 experiment into the origins of life's biochemical building blocks shows that his results were even better than he thought they were. Karen Hopkin reports

[The following is an exact transcript of this podcast.]

In 1953 a student named Stanley Miller did an experiment showing that the simple chemicals present on the early Earth could give rise to the basic building blocks of life. Miller filled a flask with water, methane, hydrogen and ammonia—the main ingredients in the primordial soup. Then he zapped the brew with electricity to simulate lightning, and, voila, he created amino acids, crucial for life. Now, scientists have reanalyzed this classic experiment, and found that the results were even more remarkable than Miller had realized.

Jeffrey Bada, a former student of Miller's, preserved the chemicals that were produced by those original sparks. And he analyzed the samples using equipment that wasn't available in the '50s. He discovered an even greater variety of organic materials than Miller originally reported. For example, Bada's team identified 22 amino acids where Miller only saw 11, results that appear in the October 17th issue of *Science*. They also found that Miller didn't even report his best results, which came from a flask that was bathed in some steamy volcanolike vapors. That setup produced an even richer mix of amino acids. I guess Miller felt that he'd proved his point without needing any data that were primordially souped up.

—Karen Hopkin



October 20, 2008

The Great Worldwide Star Count

Help scientists measure light pollution around the world by participating in the Great Worldwide Star Count. Cynthia Graber reports

[The following is an exact transcript of this podcast.]

We humans have always pondered the heavens. Astronomy and physics have come out of our wonder at the points of light in the darkness. Scientists now want to take advantage of that natural nightly gaze. They're turning to citizen scientists to count stars as a way to measure light pollution.

The project will take place from October 20th to November 3. It's sponsored by the University Corporation for Atmospheric Research. Interested volunteers in the northern hemisphere will search for the constellation Cygnus. In the southern hemisphere they'll be looking for Sagittarius.

Participants can search the skies outside their homes or in a darker area nearby. Scientists use this information to compare visibility around the world. Not surprisingly, last year they found that more developed areas have higher levels of light pollution. But the project has a second goal. The astronomers want to remind us all to take a moment to appreciate the beauty and wonder of the night sky. Information about how to participate can be found at the Great Worldwide Star Count website: www.snipurl.com/starcount

—Cynthia Graber



October 21, 2008

Mathematician Says Rays Should Reign

New Jersey Institute of Technology mathematician Bruce Bukiet calculates the odds throughout each baseball postseason. And he thinks the Tampa Bay Rays are the clear favorites to take the World Series. Steve Mirsky reports

[The following is an exact transcript of this podcast.]

The World Series starts October 22nd, with the improbable American League champion Tampa Bay Rays hosting the National League best Philadelphia Phillies. And there's a 59 percent chance that the Rays will take the title. That what Bruce Bukiet says, anyway. He's a mathematician at the New Jersey Institute of Technology who sets odds on the playoffs and World Series every year.

Bukiet starts with each player's statistics for the 2008 season. He then uses a model that estimates run production per game based on those stats. His most probable outcomes are a 20 percent chance of a Rays championship in six games, and a 19 percent chance of a seven game Rays win. But beware. In the 2006 postseason only one of his favorites in the seven different series actually came out victorious. Nevertheless, he's gotten it right in six of the last eight years. Of course, when predicting sporting events, always follow the advice of Damon Runyon, who said, "The race is not always to the swift, nor the battle to the strong. But that's the way to bet."

—Steve Mirsky



October 22, 2008

Is the Fuel of the Future Wood?

By emulating termites, researchers think they can convert wood into biofuel. Cynthia Graber reports

[The following is an exact transcript of this podcast.]

There's a push now to find the fuel of the future. Will it come from corn? Sugarcane? How about bugs? University of Florida entomologist Michael Scharf says termites may play a major role. He makes that claim in the November issue of the journal *Biofuels, Bioproducts & Biorefining*.

Termites produce enzymes. Those enzymes work with microorganisms in the bug's gut. When termites munch their way through your house, the enzymes and microbes together turn wood into simple sugars. Biofuels today come from edible plant material, such as starch in corn or sugar in sugarcane. There's a great deal of potential energy in tougher parts of the plants, but it's locked in something called lignocellulose. Researchers have been investigating heating the woody material, or grinding it and treating it. And a handful of research groups are studying the termite system.

Scientists have identified a few of the enzymes and microbes involved, but they say it'll take more research and time to apply this system to our own hunger for biofuels. We may also need to turn to other munching bugs like wood-boring beetles. Maybe someday they'll be heating our homes, not eating them.

—Cynthia Graber



October 23, 2008

Hot Cones Cue Hungry Insects

Pine cones stay warmer than the needles around them. And hungry insects have heat sensors that spot the cones. Karen Hopkin reports

[The following is an exact transcript of this podcast.]

Animals rely on all sorts of cues to find their next meal. Monkeys and birds are attracted to the colors of ripe fruits and berries. And snakes find their prey by sensing heat. Now a team of Canadian scientists finds that some insects can do the same thing, sensing the infrared radiation emitted by, of all things, pine cones.

These seed-eating bugs are not the first known to home in on heat when they're looking for food. Some blood-sucking bugs can sense the temperature of their warm-blooded hosts. But this study, published on October 22nd in the Royal Society journal *Biological Sciences*, is the first to find that insects can use infrared to find their favorite plants.

Pine cones, it turns out, run about 15 degrees warmer than the pine needles that surround them. In fact, the cones radiate so strongly in the infrared that they show up like candles on a Christmas tree. The bugs, which nosh on conifer seeds, can locate the toasty, seed-bearing cones thanks to special infrared receptors on their abdomens. When the scientists covered up those receptors, the insects couldn't see the forest *or* the trees. And the male insects probably won't even stop to ask for directions.

—Karen Hopkin



October 24, 2008

Warm Hands, Warm Heart

Being physically warm seems to be associated with emotional warmth. Cynthia Graber reports

[The following is an exact transcript of this podcast.]

You know that warm feeling you get when you spend time with someone you love? How about the one that comes from wrapping your hands around a steaming mug of coffee? They might be related. That's what scientists at the University of Colorado and Yale University claim in the October 24th issue of the journal *Science*.

The researchers recruited 41 undergrad volunteers. Participants were handed a cup of either hot or iced coffee to hold, without being told it was part of the experiment. Then they were handed a description of an imaginary person, Person A, with a list of A's personality traits. Afterwards, the undergrads described that person. Those who'd held the hot coffee rated Person A significantly warmer—friendlier, more generous—than those who held the ice coffee.

In a second study 53 volunteers held hot or cold therapeutic pads. Then they could choose a gift certificate for themselves or for a friend. Those who'd held the hot pads were more likely to be generous and give the gift certificate to friends. Researchers say this shows that physical and metaphorical warmth are linked. Which means it's not a bad idea to order a hot drink on your next hot date.

—Cynthia Graber



October 27, 2008

Brain Makes Tennis Call Error More Likely

Because of the way the brain processes visual information, there's a much higher probability that a tennis ref will call a good ball out than a bad ball in. Steve Mirsky reports

[The following is an exact transcript of this podcast.]

The eyes often don't have it. Tennis referees, for example, sometimes mess up when calling a ball in or out. And a new study finds that refs are much more likely to make a mistake by calling a good ball out than by calling a bad ball in. The research is in the October 28th issue of the journal *Current Biology*.

It takes at least a tenth of a second for us to become aware of an image striking the retina. So we all have to construct our perception of moving objects. And the way the brain works, we consistently think something has gone slightly further than it really has. It's not surprising then that we misjudge the position of hundred-mile-an-hour tennis balls.

When researcher David Whitney saw a call overturned during Wimbledon, he decided to check out referee error rates. He reviewed videos of more than 4,000 randomly selected tennis points, and found 83 incorrect calls. Seventy of the 83 were the type predicted. So players contesting calls are better off asking for reviews on their own shots called out than their opponent's called in.

—Steve Mirsky



October 28, 2008

Stopping, Sopping, Bacterial Toxins

A new class of drug fights food poisoning by mopping up the toxins that bacteria release. Karen Hopkin reports

[The following is an exact transcript of this podcast.]

As long as there have been mice, people have sought a better mousetrap. And since we figured out that bacteria can make us sick, we've searched for better antibiotics. Now scientists in Canada and Japan have come up with a new way to disarm the bugs that cause food poisoning.

Most antibiotics directly attack the microbes that make us ill. Penicillin, for example, weakens bugs' tough outer wall to the point that many of them simply explode. While such treatment kills the bacteria, it doesn't necessarily eliminate the threat. Because a lot of bugs produce toxins, and it's the toxins that knock us for a loop. Blowing up the bugs can just make things worse.

What these researchers have designed is a drug that helps the body mop up bacterial toxins. In their study, a single injection of the drug protected mice from the potentially lethal effects of shiga toxin, the sick-making molecule produced by the kinds of *E. coli* that cause food poisoning. Their results appear in the October 28th issue of the *Proceedings of the National Academy of Sciences*. With antibiotic resistance on the rise, having more weapons in our antibacterial arsenal is not a bad idea. Because anyone who's eaten the sun-baked potato salad can tell you food poisoning is no picnic.

—Karen Hopkin



October 29, 2008

Voting Affected by Implicit Beliefs

People's deeply held beliefs may contradict what they think they believe--and can affect the choices they make in the voting booth. Steve Mirsky reports

[The following is an exact transcript of this podcast.]

Still lots of undecided voters out there, with less than a week to go before election day. But many of these undecideds may already have made their choice. Even though they themselves won't learn what it is til they actually pull the lever on November 4th.

Hundreds of studies find that people's deeply ingrained implicit beliefs can contradict what they say they believe, even what they think they believe. And a recent Italian study found that implicit beliefs strongly predicted voting behavior.

Harvard researcher Mahzarin Banaji runs Project Implicit, which gauges people's implicit beliefs. One part of the project looks at Obama versus McCain. The study does not use a representative sample. Anybody can take part via a Web site, so study subjects are self-selected. But the findings are still interesting. Self-described independents who take the test actually lean toward Obama. And the test shows that many undecideds who say they're inclined toward Obama are implicitly more sympathetic to McCain.

You can find out more about your implicit beliefs by taking the Implicit Association Test at www.implicit.harvard.edu

—Steve Mirsky



October 30, 2008

Widespread Vaccination Keeps Unvaccinated Flu-Free

Getting flu shots to more people, especially health care workers in geriatric facilities, also keeps unvaccinated people safer. Karen Hopkin reports

[The following is an exact transcript of this podcast.]

When it comes to flu shots, the more the merrier. Happily, that doesn't mean you need to get jabbed more than once. What it does mean, according to two reports in the Public Library of Science journal *Medicine*, is that the vaccines are more effective when more people get them. Because each vaccinated person is like a roadblock that cuts off further infections.

In the fall of 2000 Canadians launched a unique vaccination scheme. Instead of targeting the people most at risk—children and seniors—they offered everyone in Ontario a free flu shot. They even gave them out at the local mall. Now, scientists in Toronto have analyzed the results of that experiment. They compared what flu season was like in Ontario before and after the year 2000. And they found that the universal vaccination program resulted in fewer flu-related deaths, and fewer trips to the doctor's office and the hospital.

But people over 75 didn't seem to benefit. And now Dutch scientists say that one thing that could help seniors is fully immunizing nursing home staff. Their mathematical study showed that keeping the staff flu-free could in turn cut infections in the residents by more than half. So roll up your sleeve, if not for yourself for your neighbors and your grandpa.

—Karen Hopkin



October 31, 2008

Ground Can Bounce in Earthquakes

In an earthquake, the light soil and tough crust layers combine to make it possible for the ground to bounce. Cynthia Graber reports

[The following is an exact transcript of this podcast.]

In an earthquake, the ground beneath you gives way. It's no longer the one thing you can count on to be solid and stable. Instead, it swerves, dips and waves. And now scientists are saying that earthquakes can cause the ground to do something they didn't expect—to bounce up and down like a trampoline.

Scientists at Japan's National Institute for Earth Science and Disaster Prevention analyzed information from a recent quake in their country. They noticed that the ground jolted around in a way that couldn't be explained with traditional models. They report their findings in the October 31st issue of the journal *Science*.

According to common models, earthquakes are expected to ripple horizontally—and the resulting up-down waves should be symmetrical. The June quake had rapidly accelerating up and down movement, with asymmetrical waves—and much higher peaks. The researchers propose a new model of how the soil is behaving. They say that lighter soil is bouncing off the tougher crust beneath it. Understanding how this process works is important for the architects and engineers who design bridges and buildings to withstand an earthquake's shake.

—Cynthia Graber