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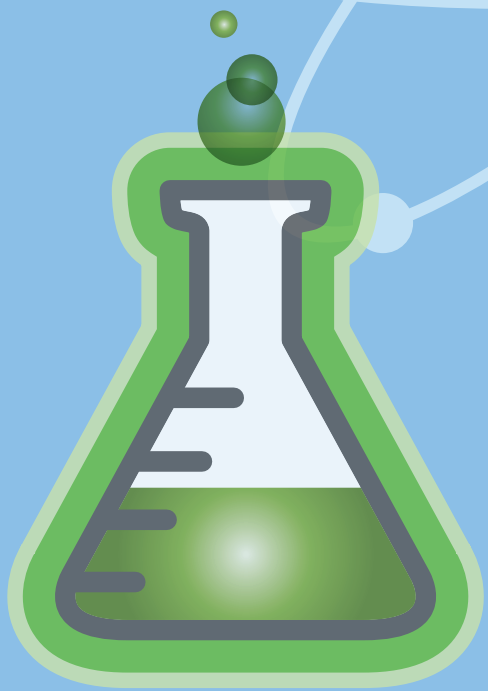

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May 1, 2009

Monkey Drives Dinosaur Game Extinct

A game recalled due to excessive lead in a monkey figure pits humans and monkeys against dinosaurs, which violates, well, so many things. Steve Mirsky explains, with additional reporting by Karen Hopkin and John Rennie

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

The U.S. Consumer Product Safety Commission and DND Imports of Los Angeles recently announced a voluntary recall of something called the Dinosaur Era 2 Hunting Dinosaur playset. Because the monkey contained too much lead. Yes, the monkey. Each set includes a dinosaur. A helicopter. Trees. A hunter. A monkey. And various hunting equipment.

Clearly, time travel is involved. Because how else do you have this particular assortment of organisms in the same place, outside of a creationism museum? Now, if I were a time-traveling hunter looking to live out Ray Bradbury's story A Sound of Thunder, and bag a dinosaur way back when, I wouldn't bring a monkey. What's he going to do, carry the guns? Really bad lesson for the kids. Maybe the idea is to shoot the dinosaur from the helicopter. Which leaves the monkey as the pilot. Another terrible example for children. Seriously, if they ever invent a time machine, they should slap a big warning label on it that says, CAUTION, NO MONKEYS. Also a good policy for DND Imports.

—Steve Mirsky explains, with additional reporting by Karen Hopkin and John Rennie.

SCIENTIFIC AMERICAN

May 4, 2009

Earth Experiencing "Climates" Change?

A study in the journal *Science* finds that the Northern and Southern hemispheres may be undergoing climate change in distinct ways. Karen Hopkin reports

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

Climate change is the great environmental challenge facing the world today. But maybe we should start calling it “climates change”. Because scientists who’ve looked to glaciers to study the history of climate on Earth have found that the Northern and Southern hemispheres have not been moving in sync.

As you might imagine, glaciers are sensitive to changes in temperature. So scientists interested in the evolution of earth’s climate use these icy formations to gauge local conditions from the past. A research team used a newfangled method for measuring rare isotopes to accurately date glaciers in New Zealand. They then compared these numbers to historic records from the Northern Hemisphere. And they found no correlation in the growth of glaciers above and below the equator over the past 7,000 years. While the vast majority of glaciers are now in retreat, a few down under have been growing and shrinking like a bunch of yo-yo dieters.

The discovery, published in the May 1 issue of *Science,* suggests that the Earth’s climate doesn’t act as a single entity, but can vary from region to region. Which would make certain glaciers, whether or not they wither, better long-term weather bellwethers.

—Karen Hopkin

SCIENTIFIC AMERICAN

May 5, 2009

Heather Today, Gone Tomorrow

A study in the *Proceedings of the National Academy of Sciences* shows that names that enjoy a meteoric rise in popularity tend to fall just as fast. Karen Hopkin reports

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

Some names never seem to go out of style, like David or Emily. Some never really catch on. Not many girls are named Laurel, even fewer are named lauryl sulfate. And now a study in the May 5th issue of the *Proceedings of the National Academy of Sciences* shows that the faster a name gains in popularity, the more rapidly it falls.

The authors were interested in why products or cultural phenomena die out. Are they displaced by the Next Big Thing? Or do they fade away, leaving behind a void that has to be filled by something. Well, one cultural taste that's easy to catalogue is what we name our kids. So the researchers looked at the popularity of baby names in France and the U.S. over the past 100 years. And they found that names that enjoy a meteoric rise—Madison and Brittany come to mind—fall from the charts just as quick.

The scientists also asked expectant couples what names they'd consider inflicting on their children. And found that most parents tend to avoid names they feel are too "faddish," ones that became overnight sensations, like Kristi and Cody. So those names soon disappear. Which could mean that the world may be safe from Cody Juniors.

—Karen Hopkin

SCIENTIFIC AMERICAN

May 6, 2009

eBay Lessens Antiquities Looting

A report in *Archaeology* magazine notes that the ability to easily trade antiquities on *eBay* has paradoxically lessened looting--because fakes have flooded the market. Cynthia Graber reports

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

When *eBay* first came onto the scene more than a decade ago, archaeologists were petrified: easily buying and selling antiquities online might increase the looting and trafficking of archaeological treasures. Now they're letting out a sigh of relief. Charles Stanish of U.C.L.A. writes in *Archaeology* magazine that *eBay* has paradoxically driven down looting.

Stanish is an authority on Andean archaeology. He's been tracking antiquities on *eBay* for nine years. He's also worked with the U.S. customs authority and visited workshops recreating antiquities. Instead of creating an incentive for people to go out and steal artifacts, *eBay* created a market for fakes, carefully produced by artisans in China, Peru, Mexico and elsewhere. The forgeries can be sold at absurdly low prices.

The flood of fakes has depressed the market, lowering the incentive to loot. And collectors are ever more wary of buying on-line. Stanish estimates that half of the Andean artifacts on *eBay* 10 years ago were fake. Five years later, 95 percent were phony. Bad news for the people who think they're buying stolen treasures. Good news for archaeologists and the sites they study.

—Cynthia Graber

SCIENTIFIC AMERICAN

May 7, 2009

Do Rainforests Create Rain?

In an essay in BioScience magazine, the Wildlife Conservation Society's Douglas Sheil and co-authors discuss the "biotic pump" hypothesis of Russian researchers Anatassia Makarieva and Victor Gorshov, which contends that rainforests attract water vapor, leading to rain, lower local atmospheric pressure and a feedback loop that keeps the whole system going. Steve Mirsky reports.

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

Rainforests exist because it rains a lot and that makes the forests grow, right? Well, not so fast. What if it's not the rain that makes the forests—what if it's the forests that actually generate the rain? That's the contention of a paper in BioScience Magazine called How Forests Attract Rain.

The article discusses a mostly overlooked hypothesis that, if right, would explain how big rainforests—like the Amazon—actually drive the entire global water cycle.

Here's the idea. Forests pull in large amounts of water vapor from surrounding regions and from nearby bodies of water. As the vapor condenses into rain, the local atmospheric pressure drops. Which sucks in more water vapor from outside the forest. Which repeats the process. Creating a positive feedback loop. The whole rainforest-water vapor system is called a biotic pump, because the living forest matter is what's moving the water.

If proven, the biotic-pump hypothesis could explain how big rainforests far from oceans stay so moist. The info would help climate models. And highlight the potential dangers of deforesting large parts of the pump.

—Steve Mirsky

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May 8, 2009

Brain Has "Moving" Parts

A study in the journal *Science* reveals that the brain region responsible for the intention to move the body also experiences the movement--but a distinct brain region controls the actual movement. Karen Hopkin reports

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

For every action, there's a reaction. And for many movements we make, there's an intention: we think about moving, and we move. Now a study published in the May 8th issue of the journal *Science* suggests that the experience of moving is all in your mind. Because the part of the brain that's active when you intend to move is the same part that lets you feel like you did.

Two separate brain regions are involved in moving your body. One part provides the intention, and the other powers the actual movement. But researchers didn't know which part let you know that you actually moved.

In the new study, scientists were working with patients undergoing surgery to remove a brain tumor. Surgeons often electrically stimulate the area around the tumor while the patient is awake and can provide feeback, so they can avoid damaging critical tissue. The scientists found that zapping one particular part of the brain made their patients feel like they wanted to move their arms, lips or tongue. And ramping up the stimulation to that spot made them feel like they'd done it. But when the team poked at the region that actually caused motion, the patients didn't know they moved—a finding that's oddly moving.

—Karen Hopkin

SCIENTIFIC AMERICAN

May 11, 2009

Math: The Eyes Have It

A study in the journal *Science* finds that the same brain circuitry that moves the eyes right does mental addition. And the circuit for moving eyes left does mental subtraction. Cynthia Graber reports

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

I still tend to move my fingers, almost subconsciously, when doing arithmetic. Well, that might not be so strange, according to research published in the May 8th issue of the journal *Science*. The report says that math and movement through space use some of the same brain circuitry.

Researchers in France scanned the neural activity in the brains of people who were moving their eyes right or left. Then study participants were asked to do arithmetic in their heads. And the brain scan data correctly showed whether the person was adding or subtracting. Because adding used the same brain circuits as when eyes moved right. And subtraction matched up with the neurons firing when eyes moved left.

Researchers say this finding shows that the development of math is too recent and advanced to have a brain region devoted solely to it. So we reuse systems that we already have. The study authors note that “throughout the history of mathematics, concepts of number and space have been tightly intertwined.” Now we know that the connection even occurs in our brains. So I don’t feel too bad about still counting on my fingers.

—Cynthia Graber

SCIENTIFIC AMERICAN

May 12, 2009

Vitamins Block Some Exercise Benefits

A study in the *Proceedings of the National Academy of Sciences* reveals that antioxidant vitamins can interfere with exercise's anti-diabetes effect. Karen Hopkin reports

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

Exercise is good for you. Antioxidants are good for you. But put them together and it's not as good as you'd think. Because a recent study shows that some vitamins block the beneficial effects of exercise.

A good workout not only gets your heart pumping, it makes your body better able to process glucose and decreases your risk of diabetes. And it does so, in part, by firing up your cells' mitochondria. Stoking those mitochondrial flames boosts your metabolism. But it also throws off so-called free radicals, which are usually considered harmful. So adding antioxidants—which get rid of free radicals—should make your workout even healthier, right?

Well, no. Forty men took part in a four-week training program. Half the group also received daily doses of Vitamins C and E. The researchers discovered that exercise on its own improves insulin sensitivity, which keeps diabetes at bay. But taking the vitamins erased that gain—findings that appear in the May 12th issue of the *Proceedings of the National Academy of Sciences*.

So you actually need a burst of potentially damaging radicals to reap some of the important rewards of a good sweat. Which means that even on a molecular level: no pain, no gain.

—Karen Hopkin

SCIENTIFIC AMERICAN

May 13, 2009

Can Hybrid Cars Be Too Quiet?

Researchers presenting their findings at the meeting of the Acoustical Society of America say that hybrid vehicles are so quiet they may present a danger to pedestrians. Karen Hopkin reports

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

Hybrid cars are good for the environment. But scientists say that they might be bad for pedestrians. Because hybrids are so quiet, it can be hard for walkers to hear them until it's too late. Listen to this. [quiet car sound]

That's a Toyota Prius moving at five miles an hour. If you didn't hear anything, well, that's what worries scientists at the University of California, Riverside. They recorded the sounds made by an approaching hybrid vehicle and by a car with a standard, internal combustion engine. They then asked listeners wearing headphones to determine whether the car was coming from the left or the right.

Turns out people could hear the standard vehicle from about 36 feet away. But the hybrid was able to sneak up to just 11 feet away before listeners knew where it was coming from. And when the scientists added some background noise, people couldn't pinpoint the direction of the Prius until it had already passed them by, results they'll be presenting at the May meeting of the Acoustical Society of America in Portland, Oregon. The solution, they say, is to require a "minimum sound" for all late model cars. No annoying beeps or alarms. Just something to supply that new-car sound.

—Karen Hopkin

SCIENTIFIC AMERICAN

May 14, 2009

Overeating Alone Explains Obesity Epidemic

Researchers presenting their findings at the meeting of the European Council on Obesity calculated that overeating alone, without including a sedentary lifestyle, is behind the obesity problem. Cynthia Graber reports

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

Americans have gained a lot of weight in the past few decades. Is it our sedentary lifestyle? The increase in processed foods and sweeteners? Supersized portions? Researchers from the World Health Organization in Australia say it's very simple: we eat too much. They presented their findings May 8th at the European Council on Obesity.

Scientists measured the metabolism of almost 1,500 adults to determine how many calories their bodies burn under normal conditions. Then they calculated how many calories they'd need to maintain body weight. They figured out how much we're eating today versus three decades ago by comparing agricultural data from then and now. They determined total food grown and imported, minus what was exported, thrown away or used for livestock.

With that information, they predicted how much fatter we should be based just on consumption. And we've actually gained a little less than the numbers say we should have. Maybe because we've added some exercise to the equation.

The scientists say this study shows that the situation is straightforward. Exercise is great, but to get the weight down, Americans have to adopt the ELF diet. Where ELF stands for eat less food.

—Cynthia Graber

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May 15, 2009

Survey: 17 Percent Have Piddled Pool

A survey from the chemical industry-sponsored Water Quality and Health Council finds one in six people admit to having peed in the pool. And the CDC supplies hygiene tips for swimmers. Steve Mirsky reports

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

Friends who had a swimming pool also had a little sign posted that said, “We don’t swim in your toilet. Please don’t pee in our pool.” Despite such widespread admonitions, four fifths of those questioned believe that their fellow swimmers are guilty of relieving themselves without bothering to get out and find a bathroom. And one in six people polled admitted that they have indeed peed in the pool.

That’s the result of a survey conducted by the Water Quality and Health Council, which is sponsored by the chemical industry, which wants to sell pool chlorine, and which partners with the Centers for Disease Control and Prevention to get the word out on healthy swimming habits.

Here are some tips from the CDC:

Don’t swallow pool water. Don’t worry, I won’t.

Shower with soap before swimming.

Wash your hands after using the bathroom or changing diapers before getting in the pool.

The CDC also feels compelled to remind people that if they have diarrhea they shouldn’t go in the pool. Talk about a few bad apples spoiling it for everyone.

—Steve Mirsky

SCIENTIFIC AMERICAN

May 18, 2009

Bad Nose for Bird Flu

A study in the journal *Public Library of Science Pathogens* finds that the human nose is too cold for bird flu viruses to thrive. Steve Mirsky reports

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

With swine flu the big infectious disease story, you don't hear much about bird flu these days. And you may not have to look past your own nose for the reason. Because a new study finds that bird flu viruses may have trouble getting a good foothold in humans thanks to the temperature of our noses. That's according to research just published in the journal *Public Library of Science Pathogens*.

Avian or bird flu comes in sixteen subtypes. Some can pick up surface proteins from human flu viruses that allow the bird virus to then infect humans. But the new study shows that normal bird flu viruses just can't seem to cut it at the typical human nose temperature of about 90 degrees Fahrenheit. Probably because the bird viruses usually make their home in the guts of birds, at a balmy 104 degrees Fahrenheit. So if a normal bird flu virus checked into your nose, chances are it would check out before it had a chance to multiply, mutate and do any damage. Indeed, in this case your chilly beak is something to crow about.

—Steve Mirsky

SCIENTIFIC AMERICAN

May 19, 2009

Elderly Who Forget Age Remember Better

A study in the journal *Experimental Aging Research* finds that senior citizens who were reminded about their age and stereotypes about old age performed worse on memory tests than secure seniors. Cynthia Graber reports

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

Senior citizens, don't believe the hype. Because a new study finds that older folks who accept that seniors' memories get worse do worse on memory tests. The finding was published in the journal *Experimental Aging Research*.

Scientists interested in the effects of stereotype on memory enlisted 103 seniors between 60- and 82-years-old to take a memory test. Before the test, some subjects were told that the test checked the effects of age on memory. Researchers call this a threat—it reminds participants of the stereotype. That group was also asked to write down their age after reading the instructions, again homing in on the stereotype.

The other group was told that the test controlled for biases. This could make them feel more secure. Researchers also gave participants a stigma consciousness questionnaire to test how strongly they bought into negative stereotypes.

The results: participants who got reminded of their age and the old age, poor memory stereotype did significantly worse. Those who say they feel stigmatized also performed more poorly. So your memory may function better just by believing that it will. In which case, you really will eventually figure out where you left your car keys.

—Cynthia Graber

SCIENTIFIC AMERICAN

May 20, 2009

Dragon's Bite Bloodier Than Believed

A study in the *Proceedings of the National Academy of Sciences* reveals that the Komodo Dragon's bite includes chemical compounds that promote the massive bleeding of prey. Adam Hinterthuer reports

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

The Komodo dragon is the largest living lizard and a fearsome predator. It's long been thought that some of its hunting prowess was due to a mouth teeming with bacteria. An attack that didn't immediately kill the dragon's victim—often a deer, but sometimes a person—would cause fatal bacterial infections. But a report released May 18th by the *Proceedings of the National Academy of Sciences* finds a more likely cause of death.

The animal has evolved a "sophisticated combined-arsenal killing apparatus." First, the animal has razor-sharp serrated teeth—perfect for tearing flesh and causing massive wounds. But, wait, there's more. When the researchers performed an MRI of a dragon, they found in its jaws what they called the most structurally complex reptile venom gland known. The gland has openings between the lizard's teeth and releases chemicals that both dilate blood vessels and prevent blood clotting. The inevitable result is massive blood loss. This new information thus helps to clean up the foul-mouthed reputation of the Komodo dragon. But it's little solace for its unfortunate prey.

—Adam Hinterthuer

SCIENTIFIC AMERICAN

May 21, 2009

Perfect Pitch Related to Language

A study presented May 21st at the meeting of the Acoustical Society of America finds that fluent speakers of tonal languages, such as Cantonese, are much more likely to have perfect pitch than are speakers of English and other atonal languages. Steve Mirsky reports

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

[Sound of notes.] Can you name those notes? Probably not—perhaps one in 10,000 speakers of European languages has perfect pitch, the ability to recognize a note without having heard any reference note first. But there's a much better chance you could successfully name the notes if you're a fluent speaker of an East Asian tonal language, such as Vietnamese, Mandarin or Cantonese. [Cantonese audio clip] That's the finding of a study by U.C. San Diego and U.S.C. researchers presented May 21st at the Acoustical Society of America meeting in Portland, Oregon.

Two hundred three U.S.C. music students listened to musical notes. The Asian musicians who spoke a tone language fluently exhibited almost perfect perfect pitch, far outperforming Caucasians fluent in a nontone language like English. And they also outdid other musicians of Asian ancestry who did not speak a tonal language. So it would seem that perfect pitch is more nurture than nature.

By the way, the notes are D, E and G. Assuming that your MP3 player is in tune.

—Steve Mirsky

SCIENTIFIC AMERICAN

May 22, 2009

Weak Have Stronger Hearing

A study presented May 21st at the meeting of the Acoustical Society of America finds that smaller, scrawnier people seem to have more sensitive hearing than the big and buff. Karen Hopkin reports

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

If you ever got picked on in the schoolyard, you might have wished for some sort of superpower: like unbeatable speed or maybe just the ability to completely disappear. Now scientists at the College of Wooster in Ohio say that you might have had a skill you didn't realize: the uncanny ability to hear a bully coming.

An earlier study found that women hear approaching noises sooner than their bigger, brawnier male counterparts. Perhaps, the scientists thought, the same would hold true for scrawny specimens versus the truly buff. So they had 50 volunteers listen to a tone that sounds like it's moving toward them. The listeners pressed a button when it sounded like the tone arrived. The scientists then assessed each subject's strength and cardiovascular fitness.

And they found that the 98-pound weaklings banged their buttons quicker than the well-muscled, because they perceived the threatening sound as being closer than it actually was. The finding got a hearing May 21st at the meeting of the Acoustical Society of America in Portland, Oregon.

Such auditory overreacting, the scientists say, could be a survival mechanism. So that the meek, while waiting to inherit the earth, can avoid getting knocked onto it.

—Karen Hopkin

SCIENTIFIC AMERICAN

May 26, 2009

Cancer Drugs May Also Treat Alcoholism

A study in the journal *Cell* shows that some fruit flies are genetically disposed to dislike drinking alcohol. And some anticancer drugs mimic the effect--which points to the possibility of those drugs treating alcoholism. Karen Hopkin reports

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

As we recover from the holiday weekend, there's some intoxicating news on curbing the effects of alcohol. In the May 29th issue of *Cell,* scientists report discovering a gene that controls fruit flies' sensitivity to ethanol. And if that just sounds like tipsytalk, the finding suggests that a couple of current anticancer drugs might find use in treating alcoholism.

Some flies, like some people, just can't hold their drink. One sip and they're tripping over their own wings. So the scientists set out to search for the fly genes involved in alcohol sensitivity. And they turned up a gene they call happyhour. Flies with a normal version of this gene are liquor light-weights, while happyhour mutants can drink their fly friends under the table.

In the normal flies, happyhour blocks a hormone called EGF. And the scientists found that two anticancer drugs, which also inhibit EGF, make boozing flies more woozy—a feeling that's as unpleasant for flies as it is for people. Rats, too, will take a nip and say enough when they're on these drugs.

Robbing booze of its buzz is one way to attack alcoholism. Which means that, at least genetically speaking, it's good to have a little happyhour.

—Karen Hopkin

SCIENTIFIC AMERICAN

May 27, 2009

Rice for Nice, Low-Price Ice

Refrigerator vacuum panels made from the ash of burned rice husks won University of Michigan students first prize in the M.I.T. Clean Energy contest. Cynthia Graber reports

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

The fridge is one of your home's biggest energy hogs. Better insulation can make refrigerators much more efficient. And a panel encasing a vacuum is one of the best insulators known. But vacuum-insulated panels are too pricy for widespread use.

Enter some University of Michigan students. They took something called rice husk ash: the leftover husks from processing rice is burned for energy, and the ash remains. It's high in silica and carbon. So they tinkered with the ash and developed a new core material for vacuum insulated panels. It's about 50 percent cheaper than what's currently available. And the resulting panels are such good insulators that swapping them into refrigerators could lead to about a 50 percent energy savings. They're space efficient too: a one-inch-thick ash panel equals today's four-inch-thick polystyrene panels.

Then Michigan business students partnered with the scientists to create a company called Husk Insulation. They entered the invention in the M.I.T. Clean Energy Prize competition. And on May 13th, Husk Insulation won the competition's first prize—a cool $200,000. Which will be invested in further research and development.

—Cynthia Graber

SCIENTIFIC AMERICAN

May 28, 2009

Human Speech Genes Mimicked in Mice

In a study in the journal *Cell,* researchers "humanized" a mouse gene--the human counterpart of which is thought to be related to speech--and the mice vocalized differently. Steve Mirsky reports, with additional commentary by The Brain

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

[Cartoon audio clip] “We interrupt your regular broadcast to bring you this important news bulletin.”

Humans can talk. Chimps can’t.

“Your scientific jargon staggers me, Pinky.”

In recent years scientists have learned that mutations in a gene called *FOXP2* seem to be crucial for human speech. Of course, it’s much, much easier to work with mice than either chimps or people. So researchers introduced genetic changes into the mouse *FOXP2*.

“You will be forced up the evolutionary ladder.”

To make it more like ours.

“Causing a mutating effect on your gene pool.”

And mice with the humanized gene show brain circuit changes known to be linked to human speech. Not only that, the genetically altered mouse pups had different ultrasonic vocalizations than did garden variety mice. The research appears in the May 29th issue of the journal *Cell*.

“If I could talk to animals I wouldn’t waste time with experiments like this.”

The authors wrote that “with this study we get the first glimpse that mice can be used to study not only disease, but also our own history."

“Finished, Pinky.”

--Steve Mirsky

SCIENTIFIC AMERICAN

May 29, 2009

Bacteria on the Skin You're In

In a study in the journal *Science,* researchers found that different skin regions harbor very different kinds of bacteria. Karen Hopkin reports

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

Have you ever said, “I know it like the back of my hand”? Well, how well do you know the back of your hand? Or the back of your knee? Or behind your ears? Probably not as well as scientists at the National Institutes of Health who just completed a survey of the bacteria that live on the skin at various parts of the body. They found that different sites harbor different bugs, results published in the May 29th issue of the journal *Science*.

The skin, they point out, is a large ecosystem that includes a variety of ecological niches. Your moist armpit is like a tropical rainforest, whereas, not far away, your forearm is as smooth and dry as a desert. So the scientists took samples from 20 different body regions in 10 volunteers. And found that the microbes in your armpit are more like those in someone else’s armpit than the ones on your own forearm.

Dry skin showed the greatest diversity with an average of 44 different species found on the forearm. While the least diverse mix, with only 19 species, lives aft of your ears. So science-savvy moms: don’t worry about washing behind the ears. Instead, bug your brood to give those grubby forearms a good scrubbing.

—Karen Hopkin