

The New York Times

FOR KIDS

THE HALLOWEEN ISSUE



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WHY DO WE LIKE BEING SCARED?



BY SUSAN COSIER

WHEN YOU HEAR the creak of the basement stairs while you thought no one was home, or you see a flash of something that crepted you out in the past, like a circus clown, you might get goose bumps or feel panic rising. Yep, you're afraid: Your body has released chemicals that make your heart pound, your skin sweat and your eyes dilate. It's a biological response known as "fight or flight," and it takes place to give you the energy and concentration needed to either attack the threat or run away. "Your body becomes like a superhero, and you may feel energized," says Margee Kerr, a sociologist who studies fear at the University of Pittsburgh.

Surprisingly, those fear reactions can also make us feel good, because they put us intensely in the moment, or because we enjoy the surge of energy. That's especially the case if we have some control over the situation and aren't in any real danger, and it's why we watch scary movies or visit haunted houses. As an added bonus, once we watch the credits roll or make it out of the haunted house alive, we often feel braver and more relaxed than before. Some people like being terrified by horror films or roller coasters more than others — that comes down to our DNA and our past experiences — but almost everyone likes some kind of thrill. Mua-ha-ha, biology! ♦



BACK FROM

THE DEAD

EXTINCT ANIMALS COULD WALK THE EARTH AGAIN — HERE'S HOW SCIENTISTS WOULD DO IT

BY NICHOLAS ST. FLEUR • ILLUSTRATION BY JON MACNAIR



EXTINCTION IS THE ultimate grim reaper. From the ferocious Tyrannosaurus rex to the clueless dodo bird, more than 99 percent of animal species that have ever lived on Earth have fallen victim to it. But some scientists are working on ways to bring lost species back from the dead. It's a process called "de-extinction." No, we're not talking about making zombies — more like Frankenstein's monster. But rather than sewing a bunch of body parts together to create a new creature, scientists are trying to build animal hybrids by editing the genetic code of a living species so that it matches that of an extinct one. "De-extinction is reinvention," says Ross MacPhee, a mammalogist from the American Museum of Natural History in New York.

One popular candidate for resurrection is the mighty woolly mammoth. These bulky ice-age beasts disappeared some 4,000 years ago. But because researchers have found woolly-mammoth

bones with well-preserved DNA, the scientists can use that ancient blueprint to alter a living relative, the Asian elephant. "We're mutating the cells of an Asian elephant so they have the exact DNA sequence of the mammoth," says George Church, a geneticist at Harvard University.

Church and his team have so far brought back and tested three genes in an Asian elephant that could make it more resistant to cold temperatures. One day, they could potentially engineer the elephant's genome so that it is born with a fur coat, smaller ears and a thicker layer of fat. Even then, though, the end result wouldn't be a woolly mammoth circa 45,000 B.C. but an animal that is part Asian elephant and part woolly mammoth.

There are many ethical issues with bringing a long-lost species back into a world that no longer has a place for it. Instead, some scientists say, a better use for this technology might be to preserve endangered animals, like the black-footed ferret or the northern white rhino, or to revive species that suffered a recent demise, like the gastric-brooding frog. Maybe extinction isn't a death sentence after all. ♦

MONSTERS THAT LIVE ON YOU

BY AMBER WILLIAMS



DON'T LOOK NOW, but there are mites living on your face. Eight-legged face mites eat, give birth to babies and die right there on your cheek. Almost everyone has them. Take a deep breath: You've just brought hundreds or thousands of species of microbes into your lungs. Sit down: You can't see it, but now you're surrounded by "a floating, leaping, crawling circus" of microscopic life, writes the ecologist Rob Dunn in his book "Never Home Alone."

Dunn and his team at North Carolina State University study the bacteria, fungi and insects that hang out in your home, and there are lots of them: As many as 200,000 species are your roommates! To find out what's hiding in your carpet, shower head or cabinets, the researchers look for bugs and take swabs (using Q-tips) of dust. "We search the house, like we would at a rain-forest site, looking at each habitat: saltshakers, refrigerators, basements, washing machines, kitty litter," Dunn says. They then analyze the DNA in the samples and catalog what critters they've found, including bedbugs (shown above), book lice, gnats, house centipedes, cellar spiders and much, much more. All of these things look absolutely horrifying when magnified under a microscope, but most of them aren't bad — and may even be helpful. For instance, human skin flakes off at a rate of about 50 million flakes a day. There are thousands of bacteria riding on and eating each flake, and those bacteria feed fungi, which feed dust mites, which feed leopard mites, which feed bigger things. "There's a whole food web associated with you falling apart," Dunn says. All of this keeps your dead skin from piling up. It's kind of gross but, hey, so are humans. ♦



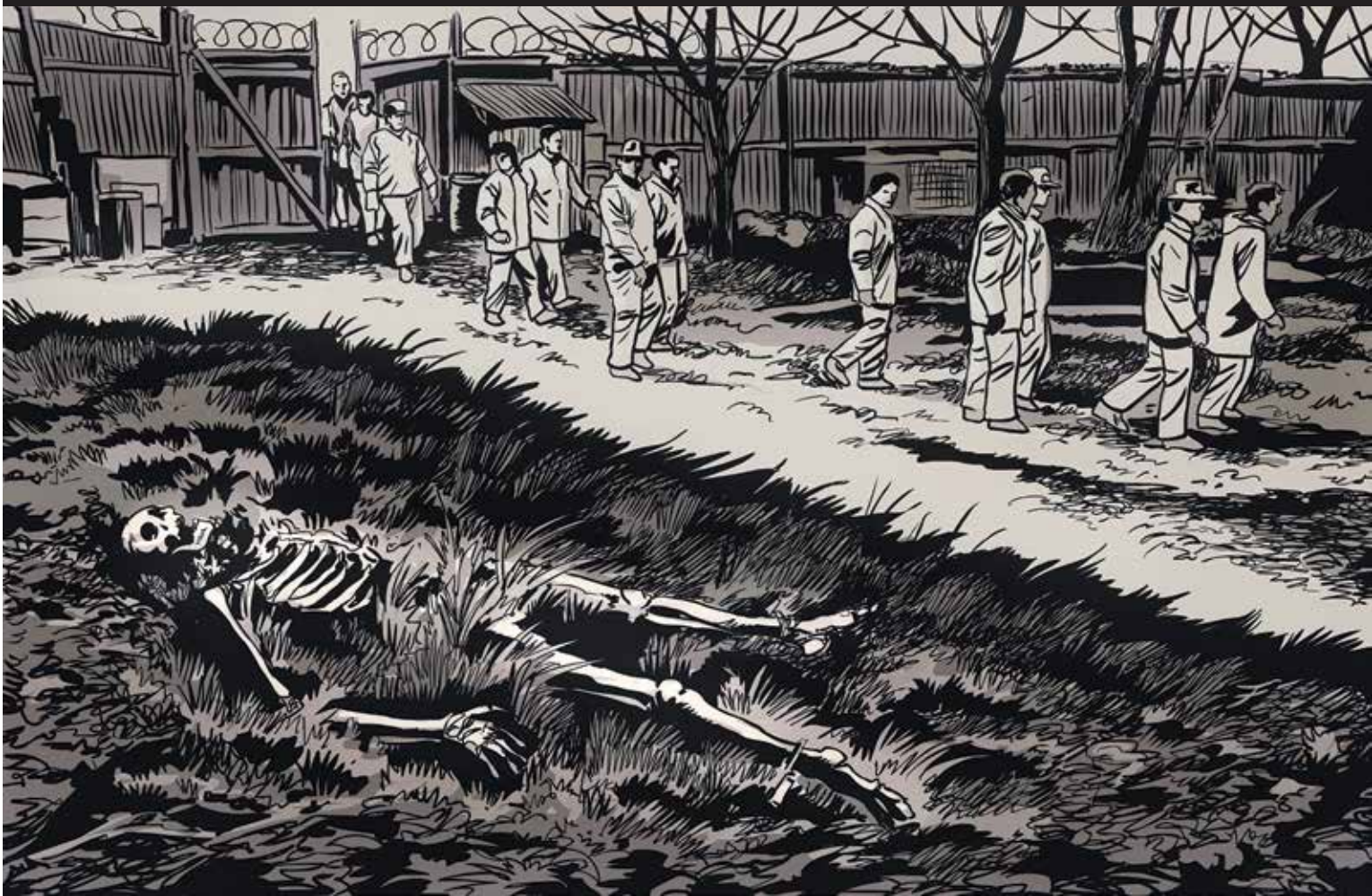
ATTACK OF THE GIANT BUGS!

So now you know you have mites on your face, but do you know what those little monsters actually look like? Have you seen the mouth of a bedbug? The spikes on a flu virus that help it hold on inside your nose? Ever wanted to be face to face with a hairy cockroach? We've created an augmented reality experience just for you, so that you can see these bugs and more, blown up larger than life and appearing right in your own room! Here's how:

1. Open the camera or QR reader in your smartphone (or a grown-up's phone).
2. Point the camera at the code box above. You don't need to take a photograph — just focus on it.
3. Touch the pop-up bubble that says "Open 'nytimes.com' link."
4. Your phone will then take you to the NYTimes app. If you don't have the app, it will open your web browser, which will give instructions for downloading the app.
5. Once you're in the app experience, you'll see bugs! Follow the onscreen instructions to make these microscopic monsters the size of a refrigerator and move around your room!
6. If you want to use a computer to see these monsters up close and personal, visit nytimes.com/monsters.

WELCOME TO THE BODY FARM

BY CHELSEA LEU • ILLUSTRATION BY FRANCESCO FRANCAVILLA



THERE'S A CERTAIN plot of land in Knoxville, Tenn. It's nearly three acres of forest on a bluff overlooking a river, and the whole area is littered with decaying human bodies. Some of them are buried. Others are lying out on the ground. And a lot of them are crawling with maggots. It's known as the Body Farm.

It sounds like the perfect setting for a horror movie — and also for science. The Body Farm is technically called the Anthropology Research Facility at the University of Tennessee Knoxville, and scientists put the corpses out there on purpose to study how dead bodies decompose, or break down. Detectives at law-enforcement agencies rely on this kind of research, known as forensic anthropology, to help them figure out when and how a person died. Depending on where a body is (under the dirt, lying on the grass) and what

the weather is like, the body will turn to ooze and bone at different rates — and someone has to figure out the effects of these factors.

When did a person breathe one last breath? Scientists can estimate by studying the insects that show up on the scene. "As soon as an individual dies, their chemistry changes, and that chemistry is attractive to female flies," says Dawnie Steadman, a skeletal biologist at the facility. If it's warm out, the flies lay eggs on the body within hours after death, which hatch into maggots that then feed on the flesh a few days later before they leave. Beetles arrive afterward, when the body dries out, since they prefer to eat harder tissue like dried skin and cartilage. Depending on which creepy-crawlies are there and whether they're babies or adults, scientists can work backward to estimate how long the

body has been lying outside.

Researchers also estimate the time of death by seeing how much of the body has been consumed by bacteria. Part of the reason dead bodies look bloated, Steadman says, is that they're filled with gas from those microbes. That gas is filled with smelly chemicals with names like putrescine and cadaverine, which give corpses the strong, unmistakable scent of decay. Scientists might also investigate isotopes — different forms of elements — in hair, teeth, fingernails and bone, which can give clues to where people grew up and where they have lived.

Ultimately, all this research helps identify missing people, which is why 4,000 "pre-donors" have signed up to give their own bodies to the Body Farm when they die to help solve cases faster in the future. ♦

SCARY BUT TRUE



"GIANT SPIDERS' WEB COVERS GREEK BEACH"

GUARDIAN
SEPT. 20, 2018

"AUSTRALIAN RESEARCHERS HAVE JUST DETECTED MYSTERIOUS RADIO SIGNALS FROM DEEP SPACE"

BUSINESS INSIDER
AUSTRALIA
OCT. 11, 2018

"SCIENTISTS IDENTIFY 'MUMMY JUICE' IN EGYPTIAN SARCOPHAGUS"

NEW YORK POST
JULY 23, 2018

"VENOMOUS SEA CREATURES ON THE RISE THANKS TO CLIMATE CHANGE"

NATIONAL GEOGRAPHIC
OCT. 8, 2018



MY SCARIEST MOMENT



Santiago Orellana, age 10

When I was about 7, I was scared of everything, especially ghosts. Once, my brother was in our living room, and he saw a little girl come into our apartment. He thought she was real, but he checked, and the door was locked. We've had three apartments, but he told me that she followed us when we moved. One day, I was watching TV when I felt something tug on the back of my shirt behind my neck. I thought my dad had played a trick on me, but he wasn't there. I thought about the little girl, but it couldn't have been her. The tug was too strong. It was something paranormal: an older-man ghost. My sister told me that ghosts don't try to kill you — they just try to mess around with you. And that's what he did. ♦