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# Deadly ANIMALS



## THAT JUST MIGHT SAVE YOUR LIFE

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*Sure, you know these five creatures as stinging, biting merchants of death. But isn't it time we put aside our differences and embraced the positive?*

### 1. SCORPIONS: TAKING A BITE OUT OF BRAIN CANCER



**IT COULD KILL YOU:** Scorpions might hang out mostly in the deserts of Africa and Asia, but that doesn't mean you won't find the occasional one hiding in the back of your tool shed. And that's a problem, because the little buggers are venomous. For the most part, scorpions use their toxins to capture prey, ward off competitors during mating season, and defend themselves against larger predators. Unfortunately, humans count as larger predators. A sting by some species can leave you with any number of potentially deadly conditions, including heart and lung failure.



**BUT IT JUST MIGHT CURE YOU:** Medical researchers at the University of Alabama at Birmingham (UAB) have discovered a new use for scorpion venom—in cancer medication. Each year, some 9,000 Americans are diagnosed with malignant glioma, a form of brain cancer that kills about half of its victims less than a year after diagnosis.

Glioma cells work a lot like cockroach muscle cells. And while that fact itself is pretty disgusting, it also got UAB researchers thinking about the giant Israeli scorpion, whose venom is harmless to humans but deadly to its cockroach prey. Doctors found that when they injected a drug derived from the venom of giant Israeli scorpions into cancer-infected human brains, the poison destroyed the glioma cells and left surrounding, healthy cells alone. The treatment is still in the early stages of development, but researchers remain optimistic.

### 2. CONE SHELL SNAILS: LITTLE CREATURES TACKLING BIG PAIN



**IT COULD KILL YOU:** Thanks to their unique colors and intricate patterns, cone shells look like they'd make great beach souvenirs. But watch your fingers; they're actually home to one of the world's deadliest creatures. Cone shell snails come equipped with an extendable "arm"—complete with a sharp, venomous tooth—that they use to immobilize and kill prey. And while the venom certainly helps the slow-moving hunters from going hungry, it can also paralyze, or even kill, victims. The good news: Death by cone shell is completely painless.



**BUT IT JUST MIGHT CURE YOU:** Cone shell venom, called conotoxin, has incredible potential as a painkiller, with one added bonus: Unlike many current anesthetics, conotoxin isn't addictive. Ireland-based Elan Pharmaceuticals was the first to develop and market a drug made from the venom in 2004. The drug, called Prialt, is pumped into the fluid around a patient's spine to relieve chronic pain and is believed to be up to 1,000 times more powerful than morphine. Meanwhile, at the University of Melbourne, a research team headed by Professor Bruce Livett is currently developing another conotoxin-based painkiller called ACV1, which was first tested on humans in the summer of 2005. Unlike

[left\_brain]



Prialt however, ACV1 doesn't affect a patient's blood pressure and can be injected under the skin, making it a lot less intimidating. Plus, ACV1 is believed to be as much as 10,000 times stronger than morphine.



### 3. POISON DART FROGS: A HEART-HEALTHY CHOICE



**IT COULD KILL YOU:** You know an animal is bad news when its sweat was once considered a state-of-the-art military technology. Meet the poison dart frog, which secretes a highly dangerous neurotoxin, called batrachotoxin, through its pores. The toxin is so deadly that simply touching the frog's skin can spur a fatal cardiac arrest. In fact, various Latin American tribes used to collect the stuff (carefully) to poison the tips of their arrows for hunting and warfare. But interestingly enough, the frogs don't produce their own toxin. They actually get batrachotoxin from eating insects that most likely pick up the poison from the plants they consume. The same frogs, if raised in a laboratory rather than the rain forest, aren't poisonous at all.



**BUT IT JUST MIGHT CURE YOU:** Before batrachotoxin stops your heart, it speeds it up.

Consequently, medical experts believe it might be possible to tweak elements of the frog's toxin to bring patients out of cardiac arrest and potentially save lives. And because it also deadens nerve endings, batrachotoxin has potential as an

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ingredient in anesthetics. Studies into other uses of the toxin are still in the early stages, but the frog's medical benefit alone is a great argument for preserving the rainforest. Most scientists believe we've only just begun to grasp the pharmaceutical possibilities of some of the world's rarest and deadliest creatures.

### 4. VIPERS: LOWERING YOUR BLOOD PRESSURE SINCE 1981



**IT COULD KILL YOU:** Most vipers are scary enough as is, but jararaca vipers are venomous to boot. But what's truly fascinating is the unique way their venom works. Unlike a traditional toxin, viper venom works by preventing the blood from clotting, meaning the snakes actually kill their victims by causing them to bleed to death.



**BUT IT JUST MIGHT CURE YOU:** Lucky for us, slow-clotting blood isn't always a bad thing. Researchers have found that small doses of viper venom can prevent arteries from hardening, thus stopping the kinds of blood clots that commonly occur in cardiac patients. In fact, Brazilian viper venom (or at least a synthesized version



of it) is a key ingredient in most ACE inhibitors found on the market today. Introduced in 1981, ACE inhibitors work by slowing down the body's angiotensin converting enzyme (ACE), which produces a peptide that causes muscle constriction around blood vessels. That kind of constriction can set off a chain reaction whereby a person's blood vessels narrow and his or her blood pressure shoots through the roof, leading to greater risk of heart attack and other ailments. Because the ACE inhibitors can stop this domino effect, they're frequently used to treat millions of men and women with high blood pressure.

### 5. GILA MONSTERS: ATTACKING TYPE 2 DIABETES



**IT COULD KILL YOU:** One of only two species of venomous lizards, the Gila monster is native to southwestern United States and northern Mexico. Unlike other deadly critters, Gila monsters don't inject venom directly into their victims. Instead, poison oozes from the lizard's teeth into the open wounds of its prey, usually while the Gila monster is chewing. Because of this, human fatalities from Gila monster bites are rare, but a bite can cause intense pain, nausea, swelling, fatigue, dizziness, and chills—none of which is particularly fun.



**BUT IT JUST MIGHT CURE YOU:** In addition to causing all those nasty side effects, Gila monster venom stimulates insulin production and slows down glucose production, which is great news for diabetics. Byetta, a drug manufactured by Amylin Pharmaceuticals and Eli Lilly & Company to treat Type 2 diabetes, uses a manufactured form of Gila monster venom as its main ingredient. Approved by the FDA in April of 2005, patients can inject Byetta before meals to help their bodies produce the right amount of insulin at the right time—the best part being that it doesn't cause the mood swings often associated with traditional insulin regimens. 🙌