

## Lizard Lessons

The little Anolis lizard is the star player in research conducted by Richard Glor, an assistant professor of biology, and Daniel Rabosky of the University of California at Berkeley, showing that species diversity is limited by geography.

The biologists studied patterns of species accumulation of lizards over millions of years on the Caribbean islands of Puerto Rico, Jamaica, Hispaniola, and Cuba.


Historically, biologists needed fossil records to study patterns of species diversification of lizards on the Caribbean islands. But advances in molecular methodology have allowed Glor and Rabosky to use DNA sequences to reconstruct evolutionary trees that show the relationships among species.

The two scientists found that species diversification of lizards on the four islands reached a plateau millions of years ago and has essentially come to an end—a finding that refutes some recent work suggesting that species diversity never enters equilibrium.

“Geographic size correlates to diversity,” says Glor. “In general, the larger the area, the greater the number of species that can be supported.” The research was published in the journal *Proceedings of the National Academy of Sciences*.

“When we look at other islands and continents that vary in species richness,” Glor says, “we can’t just consider rates of accumulation; we need to look at the plateau points.”

A state of equilibrium doesn’t mean that the evolution of a species stops, Glor adds. Lizards will continue to adapt to changes in their environment, but they aren’t expected to develop in ways that increase the number of species within a habitat. —Peter Iglinski



**LANDMARK LIZARD:** Native to Caribbean islands, Anolis lizards, like this one in the lab of Rochester biologist Richard Glor, are providing insights into evolution and species diversification.

## Research Roundup

### CHILDREN IN APARTMENTS FACE SECONDHAND SMOKE RISKS

Even when no smokers live within their own home, children living in apartment buildings are exposed to secondhand smoke, according to a study published in the journal *Pediatrics* and carried out by researchers at the Medical Center, MassGeneral Hospital for Children, and the American Academy of Pediatrics' Julius B. Richmond Center for Excellence. Led by Karen Wilson, an assistant professor of pediatrics, the study is the first to report significant evidence of increased tobacco smoke exposure in the blood of kids who live in multi-unit housing. Exposure to secondhand tobacco smoke puts children at greater risk for several illnesses, including respiratory infections, asthma, and sudden infant death syndrome.

### STEM CELL ADVANCE MAY BE STEP FORWARD FOR BRAIN DISEASE

Medical Center scientists have created a way to isolate neural stem cells—the kind of cells that give rise to all the cell types of the brain—from human brain tissue with unprecedented precision, an important step toward developing new treatments for conditions of the nervous system, such as Parkinson's and Huntington's diseases and spinal cord injury. The work by a team of Rochester neuroscientists, led by Steven Goldman, a professor of neurology and chair of the neurology department, was published in the *Journal of Neuroscience*. The ability to gather human cells more efficiently could aid potential treatments built around transplanting stem cells.

### ARTHRITIS PILL PROTECTS AGAINST SKIN CANCER

A widely used arthritis drug reduces the incidence of non-melanoma skin cancers—the most common cancers in humans—according to a study published in the *Journal of the National Cancer Institute*. Led by Alice Pentland, a professor of dermatology and chair of the dermatology department, the research indicates that the cox-2 inhibitor celecoxib—commercially known as Celebrex—led to a 62 percent reduction in non-melanoma skin cancers, a decrease much greater than that achieved through use of sunscreen, which provides only moderate protection against common skin-cell carcinomas.

### FOR SOME, LAPAROSCOPIC TECHNIQUE ISN'T BETTER

When appendicitis strikes, open surgery reduces the infection risk for some patients, according to new research published in the journal *Annals of Surgery* and led by John Monson, a professor of colorectal surgery and chief of the Division of Colorectal Surgery. U.S. surgeons perform more than a quarter million appendectomies annually, most laparoscopically. But some people—older patients, smokers, men, those who are fighting infection, and those with diabetes—face a lower risk of deep abdominal infections with a conventional incision, the study indicates.

### BACTERIA SEEK TO OUST EGG AS TOP VACCINE TOOL

Only the fragile chicken egg stands between Americans and a flu pandemic that would claim tens of thousands more lives than are usually lost to the flu each year. Vaccine production hinges on the availability of hundreds of millions of eggs. Rochester scientists have taken an important step toward ending the dominance of the oval. In a study published in the journal *Vaccine* and led by John Treanor, a professor of medicine and an expert on flu vaccines, scientists have demonstrated that an experimental flu vaccine grown entirely in bacteria—a process that bypasses the egg completely—works well in people, triggering an immune response that would protect them against the flu.

### DECADES AFTER CHILDHOOD RADIATION, THYROID CANCER'S A CONCERN

When children are exposed to head and neck radiation, whether due to cancer treatment or multiple diagnostic CT scans, the result is an increased risk of thyroid cancer for the next 58 years or more, according to a study led by Jacob Adams, an associate professor of community and preventive medicine. The study, published in the journal *Radiation Research*, is believed to be the most extensive of any group of children exposed to medical irradiation and followed to check on the incidence of thyroid cancer.

