

# More SPARKs Set to Fly

Alberta, Lethbridge, Saint Mary's and York universities were the successful applicants in NSERC's recent SPARK (Students Promoting Awareness of Research Knowledge) competition.

Eighteen institutions are now participating in the NSERC program, which began three years ago as a pilot project. Based on the University of Guelph's award-winning SPARK program, it was designed to train students in various aspects of communications and to promote research news to the public. Through NSERC's SPARK program, students are recruited, trained and paid to write stories based on the NSERC-supported research at their university.

Here is a story by a SPARK student writer. For others, visit [www.nserc.ca/science/spark/index.htm](http://www.nserc.ca/science/spark/index.htm).



## Newsbureau Working for You

The NSERC Newsbureau team generated an unprecedented level of media coverage in the first months of 2001. Here are a few examples.

- McGill's Dan Levitin's work on psychology and music was featured extensively on TV and radio and in various print media. Over the Easter weekend, he and Dalhousie's John Connolly were the top stories on consecutive editions of *@discovery.ca*. John, whose neural imaging techniques are used to assess brain damage and treat dyslexia, was also busy giving radio and press interviews in Halifax.
- University of Saskatchewan mathematician Jamie Campbell received considerable radio and press coverage, including the *Globe & Mail* (front page) and Singapore's top English-language newspaper.
- University of New Brunswick's Eric Hildebrand enjoyed radio and press coverage in New Brunswick, Nova Scotia and Montreal for his research into elderly rural drivers.
- The *Ottawa Citizen* prominently featured Université Laval biologists Jean Huot and Christian Dussault and their findings on heat-stressed moose.

### Evolutionary wonders

#### Upside-down lizards and long-lost marine life

By Alexandra Venter  
SPARK student

How does a gecko walk across the bottom of a leaf without falling off? How did ancient reptiles swim? U of C zoology professor Tony Russell (right) has been asking questions like these throughout his career.

Russell, who began teaching at the University of Calgary in 1973, likes to study topics that make people say "gee-whiz!" His interest in natural oddities extends to both living and extinct organisms, and he uses his knowledge of each to "reciprocally illuminate each other."

Russell's recently completed project on geckos and anoles, also known as American chameleons, has captured nationwide attention. The aim of this NSERC-funded project was to understand how these different critters manage to stick to smooth surfaces so well.

Russell's research team found that both lizards use essentially the same mechanism to complete the task, despite being genetically unrelated.

Neither lizard uses suction or secretions to cling. Instead, the amazing sticking ability is due to intermolecular forces of attraction. With each step, the gecko's foot uncurls like a party horn, flattening tiny hair-like projections called setae on the pad of the foot. The tip of each seta may be further split into a thousand spatulae, so small they are only visible using an electron microscope.

It turns out that the cumulative effect of the weak atomic bonding between each spatula and a surface is enough to keep the gecko firmly affixed.

Researchers from the University of California at Berkeley, Lewis and Clark College in Oregon, and Stanford University have depended on Russell's work on the mechanics of gecko locomotion in their studies, in which they have measured the force of attraction of a single seta to an aluminum wire.

Russell says that anoles walk in a mechanically slightly different way than geckos, but have similar, although independently derived setae, on their feet. The fact that anoles and geckos use such a similar mechanism to adhere to surfaces intrigues Russell. This likeness in function is an example of evolutionary convergence and constraint, he explains.

Russell's work on living reptiles complements his long-standing love of dinosaurs and other extinct animals.

"You can't learn more about fossils than you can know about living organisms," he says.

The recent discovery of several rare marine fossils in the tar sands in Fort McMurray has Russell very excited. Russell, who is also a research associate of the Royal Tyrrell Museum of Palaeontology at Drumheller, will be studying the find with Elizabeth Nicholls of the museum and a team of graduate students.

The find includes both plesiosaurs and the first ichthyosaurs dating from the lower Cretaceous period ever to be discovered in Canada. (Plesiosaurs resembled the Loch Ness monster, while ichthyosaurs looked more like dolphins.) Other ichthyosaurs of similar age have been found in Germany and Australia.

Once the specimens are prepared — a process that will take thousands of hours — Russell hopes they will help him to understand more about patterns of diversity among these organisms.

"For any fossil organism you can never know what happened, but there's a desire for us to try and understand as best we can how those organisms may have behaved and functioned and lived their lives."

*Alexandra Venter recently defended her master's thesis in the Faculty of Science and is a writer with the U of C SPARK program (Students Promoting Awareness of Research Knowledge).*