## Best of the Blogs

BIOLOGY

# Lice Don't Lie

### Parasites give clues to lemurs' social lives

**ITCHY?** A mouse lemur from Madagascar

**Weighing in** at only 40 grams, brown mouse lemurs are one of the smallest species of primate in the world. Their diminutive size, as well as their nocturnal, tree-dwelling lifestyle, makes them difficult to track and observe. Sarah Zohdy, then a graduate student at the University of Helsinki in Finland, and her colleagues came up with an ingenious way to study the interactions of these small lemurs: they followed their lice.

Scientists have estimated that lice originated at least 130 million years ago, when they fed off feathered dinosaurs, although they now live on just about all species of birds and mammals. They tend to be very host-specific, meaning they only live and feed on one species or a set of closely related species. And for lice to reproduce and spread, their hosts have to be in fairly close contact (like, as many parents know, kids in a kindergarten classroom). In wild species, lice rarely switch hosts unless the animals interact physically, whether through wrestling, nesting together or mating.

Zohdy and her colleagues had been studying lemurs in Madagascar, using traps to monitor their movement. The team tagged *Lemurpediculus verruculosus*, a species of lice that is specific to the brown mouse lemur, with a unique color code using nail polish. Over time the researchers continued to trap lemurs and look at their lice to see if any of the tagged ones had switched hosts.

They documented 76 transfers among 14 animals—all males—over the course of a month, which happened to be during the breeding season. The researchers hypothesized that the male-only transfers most likely occurred during fights over females. But perhaps more interestingly, the lice data found 13 new social interactions that the traps had failed to predict. Among these was the finding that lemurs travel more than had been thought: some lice transfers occurred between lemurs that had last been trapped more than 600 meters apart.

This is not the first study that used lice to look at a bigger scientific picture, but it is one of the first to use lice to study behavior in a living wild species. The team hopes its work shows the usefulness of this technique. *—Christie Wilcox*

*Adapted from the Science Sushi blog at blogs.ScientificAmerican.com/science-sushi*

BOTANY

# Beautiful Mutants

### Researchers discover the genetic secret behind van Gogh's famous sunflowers

**The word "sunflower" brings to mind a mane of vibrant yellow petals encircling a dark whorl of seeds. But not all sunflowers are alike. Some sunflowers have scraggly petals, for instance, or small centers. Many of the sunflowers Vincent van Gogh depicted in his famous series of oil paintings look rather unusual—they sport woolly, chrysanthemumlike blooms. Now scientists have pinpointed the genetic mutation responsible for these strange sunflowers' abundance of small yellow petals.**

**Van Gogh's paintings from the late 1880s clearly feature some typical sunflowers, but they are paired with what look like fuzzy pom-poms stuck on sunflower stems. Such double-flowered sunflowers, as they are known, have overlapping rows of supple yellow petals and a small, sometimes hidden, center. In a new study, John Burke of the University of Georgia and his co-workers traced the unusual floral arrangement of van Gogh's sunflowers to mutations of a single critical gene. The findings appear in the March 29 *PLoS Genetics*.**

**Burke and his colleagues worked with typical sunflowers as well as double-flowered cultivars, such as the teddy bear sunflower, which looks like a giant dandelion. By crossing different varieties of sunflowers with one another and crossing their offspring with themselves, the researchers discovered that double-flowered cultivars have mutated forms of a gene called *HaCYC2c*.**

**For thousands of years people have been growing sunflowers for their seeds, oil and beauty. The first double-flowered sunflowers probably arose naturally as the result of a chance mutation. Breeders very likely seized the opportunity to preserve the mutants' unique qualities and offer customers a new kind of sunflower. Apparently van Gogh was one such customer.**

***—Ferris Jabr***

***Adapted from the Observations staff blog at blogs.ScientificAmerican.com/observations***

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