

Garter snakes yield sexual chemistry

Scientists have isolated, identified and synthesized two pheromones in the Canadian red-sided garter snake, marking a rare instance in which the potent compounds have been characterized in a vertebrate, they say. Pheromones are chemicals produced by an organism that cue specific behaviors when smelled by the creature's compatriots.

The researchers, led by biochemist Robert T. Mason of the National Heart, Lung, and Blood Institute in Bethesda, Md., analyzed the female sex-attractiveness pheromone and the male sex-recognition pheromone that guide the species' mating behavior. They report their findings in the July 21 *SCIENCE*.

For one month every spring, male garter snakes gather in groups of several thousand waiting for mates to show up. Females appear sporadically, each immediately surrounded by 10 to 100 males engaging in "courtship" behavior—rapid tongue-flicking and chin-rubbing up and down the female's back. One male eventually mates with the female.

Mason and his co-workers collected sexually primed, unmated adult garter snakes, 18 females and 24 males. They killed the animals and extracted their skin lipids, which contain the sex pheromones. The lipids were then broken down into several solutions containing different chemical compounds.

The researchers poured solutions of the female lipid on paper towels and placed these in a den with courting male garter snakes. Only one preparation, containing a series of previously undescribed long-chain methyl ketones, elicited courtship behavior. Scientists had found long-chain methyl ketones in some insects and snakes but had not established their behavioral functions.

When Mason's group added extracts of male lipids to female extracts, male courtship stopped, suggesting males emit specific chemical cues that identify them as males, the researchers say. One chemical in the male lipid, squalene, caused a significant drop in courting and is important in the male sex-recognition pheromone, Mason adds.

The researchers also collected skin lipids from "she-males," a small group of male garter snakes that other males court as if they were females. Their skin chemistry contains no squalene and is more like that of females, Mason notes.

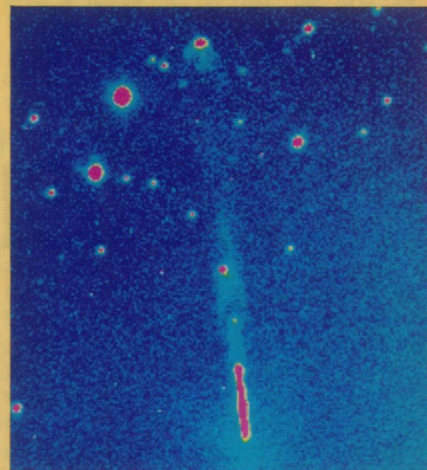
Preliminary studies of related groups of snakes, such as brown tree snakes, suggest females possess some of the same methyl ketones as well as variations of the compound, he says. Different sex pheromones may help to maintain snake species or promote their evolution, Mason contends. — *B. Bower*

Gigantic gas jet points to newborn star

Stars emerge from the collapse of large clouds of gas and dust. Material that doesn't fall directly toward the center collects into a disk surrounding the burgeoning star. As new cloud material feeds into this disk, matter from the disk's inner rim rains down on the new star. This matter is in such violent motion that some of it gets ejected into space. The recent discovery of a long, extremely narrow, high-speed jet of gas emerging from a young star bears witness to this scenario.

The jet, seen as a ribbon of glowing gas, is the largest flow from a young star yet found, says Bo Reipurth of the European Southern Observatory in La Silla, Chile. The star, still hidden in its molecular cloud, lies within the Orion star-formation region, about 1,500 light-years from Earth. Infrared measurements show the young star is about 25 times more luminous than the sun, indicating material is still spiraling down from the star's disk to its surface.

In this computer-enhanced image, the hidden star sits just below the long streak in the bottom half of the picture. The colored streak is the most visible part of the jet, but a faint glow above the streak indicates the jet actually extends much farther. Near the top of the pic-



European Southern Observatory

ture, a small, bright, mushroom-shaped patch shows where the jet has rammed into a region of dense interstellar gas. Reipurth has detected similar patches (not shown) in the opposite direction from the star. The entire complex, designated HH111, extends 2 light-years.

These observations suggest a young star can erupt several times within a short period of time. "Clearly the HH111 complex represents a phenomenon that evolves with amazing rapidity," Reipurth reports in the July 6 *NATURE*.

— *I. Peterson*

Aspirin and heart disease: A final report

Healthy men aged 50 and over can nearly halve their risk of a first heart attack by taking an aspirin every other day, scientists said this week in the final cardiac report of the widely publicized Physicians' Health Study. Their conclusion differs from the study's preliminary finding that aspirin therapy could also benefit younger men (SN: 1/30/88, p.68).

A research team at Harvard Medical School and Brigham and Women's Hospital in Boston found that physicians who took 325 milligrams of aspirin on alternate days reduced their risk of heart attack by 44 percent compared with a control group taking a placebo. But the study ended before the researchers could ascertain whether aspirin therapy reduced the number of fatal heart attacks.

"We would have had to continue the study past the year 2000" to determine if aspirin saves lives, says team member Julie E. Buring.

She cautions that although the six-year study involved more than 22,000 physicians aged 40 to 84, including some 9,000 men in their 40s, these numbers are still too small to demonstrate aspirin's potential to prevent the relatively rare occurrence of heart attacks in healthy men under 50. Buring says that in spite of the findings from the physician study, she

agrees with a federal task force on disease prevention that doctors should limit preventive aspirin therapy to men aged 40 and over at increased risk for heart attack.

An editorial accompanying the findings in the July 20 *NEW ENGLAND JOURNAL OF MEDICINE* suggests that because of the study's small number of heart attacks—139 among aspirin takers, 239 in the placebo group— aspirin's reduction of heart attack risk may have more meaning as an absolute number than as a percentage. The 44 percent reduction translates into a decrease of fewer than two heart attacks per 1,000 people each year, the editorial notes. That factor becomes critical in weighing aspirin's therapeutic potential against such possible side effects as increased incidence of hemorrhagic bleeding and ulcers.

"We have to put the percentage in perspective," says editorial coauthor Marc Cohen of Mount Sinai Medical Center in New York City. "Is it worth it to expose 20,000 people to gastric ulcers to improve survival for four people?" He, too, favors reserving aspirin therapy for people at high risk of heart attack.

Buring told *SCIENCE NEWS* that her team plans to conduct a similar aspirin study in women, using a group of 44,000 nurses.

— *R. Cowen*