

## **Jeffrey Stivers: Just what is it mosquitoes like about us?**

Researchers go to smelly lengths to learn

Saturday, June 28, 2003

By **JEFFREY STIVERS**, Special to the Daily News

The path to new mosquito control techniques and equipment is often convoluted, loaded with dead ends and frequently comical. This is true of some of the current research trying to identify mosquito attractants and repellents.

Mosquito attractant and repellent identification is a hot new research topic being investigated around the world. The attractant-baited barrier line developed by the Collier Mosquito Control District and installed at the Steven's Landing condominium uses attractants to control mosquitoes. For details on this system, visit [www.collier-mosquito.org](http://www.collier-mosquito.org) and look under Research.

While the identification of new attractants is a serious endeavor, it has its lighter side.

A Dutch researcher working in Africa on mosquitoes that transmit malaria wanted to try to isolate attractants from humans. To determine which part of the human body was the most attractive he designed a simple experiment.

A mosquito net, similar to a bed net, was hung inside a room and over a cot. A number of willing volunteers would, one at a time, strip down to a pair of shorts, enter the net and lie down on the cot. The researchers would then place a number of hungry mosquitoes inside the net.

They then sat back, fully clothed and on the side of the net without mosquitoes, and observed where the mosquitoes congregated on the hapless volunteer.

What they found was that the majority of the mosquitoes congregated around the the volunteers' feet. Obviously, the feet were producing some sort of odor that was attracting the mosquitoes. Since they were in Africa without sophisticated equipment to chemically identify the attractants, a little foot sniffing was in order.

After a round of literally sniffing dirty feet, the researchers had a "eureka" moment. The feet, they determined, smelled remarkably like limburger cheese. Subsequent tests of limburger cheese in mosquito traps showed that it did attract mosquitoes.

Based on this information, a United States Department of Agriculture researcher in Gainesville decided to do a more scientific study. He wanted to try to isolate the specific chemicals coming off of feet that were attractive to mosquitoes. The problem was how to get the chemicals from the feet into his high tech test equipment. He, too, came up with a simple solution.

He and his son, who were both athletic and involved in soccer and basketball, put on athletic socks. After about four days of sports, school, the office, yard work and who knows what else, they took the socks off. A chemist, presumably with a strong stomach or a gas mask, took the socks and identified the attractant chemicals emanating from them.

While the odors wafting from those nasty socks do not appeal to humans, the researchers isolated several chemical compounds that appeal to mosquitoes. These compounds look promising for use in mosquito control in the future.

It's not very appetizing work, but from such simple, and sometimes humorous, experiments derive the mosquito control techniques and equipment of the future. New attractants, as well as new repellents, may change the way mosquitoes are controlled in some instances.

Now that we have all this knowledge, the next time someone complains that mosquitoes really seem to like them, we can suggest that they wash their feet. Or change their socks. Or quit eating limburger cheese.

Or if diplomacy is required, suggest a repellent with DEET in it.



*Jeffrey C. Stivers, Ph.D. is director of research for Collier Mosquito Control District. Contact him at [JStivers@collier-mosquito.org](mailto:JStivers@collier-mosquito.org) or by phone at 436-1000.*