

# THE FORKED TONGUE

THE MONTHLY NEWSLETTER OF THE GREATER CINCINNATI HERPETOLOGICAL SOCIETY

Vol. XXX, No. IX

[www.cincyherps.com](http://www.cincyherps.com)

September 2005

## **The Editor's Den**

We need articles! The featured article was forwarded from The Center for North American Herpetology. It's a bit technical but speaks to the need for conservation and the fact that our sometimes slimy friends have a lot to offer.

## **Calendar of Events**

11/05/05 Monthly meeting featuring our own Polly Whittaker speaking on Alternative Habitat Design.

11/25&26/05 GCHS Reptile show at the Cincinnati Museum Center.

12/07/05 Holiday Meeting at Ryan's Steakhouse in Erlanger KY.

## **GCHS Reptile Show**

This has become a tradition for the GCHS and is typically our single largest event of the year. We will set up at 9:00 am Friday morning and the show will run until about 5:00 pm on Saturday. We will need as many different types of reptiles and amphibians as we can get. We also need a lot of members to help make this a success!

## **Annual Holiday Meeting**

This also has become a tradition. We will have our meeting at the Ryan's Steakhouse in Erlanger, KY on our regularly scheduled meeting night. We will have a private room in the back of the restaurant. The cost is \$8.59 per adult (defined as 13 and over) plus drink (\$1.39) plus 15% gratuity. This adds up to \$11.50 per adult. Kids under 3 are free. Kids 4-12 are 50 cents per year of age. Each person pays as they walk in. It is an all-you-can-eat buffet with a wide variety of foods, salad and desserts. You can arrive at 6:30 and get your food. The program, featuring Paul Krusling, will focus on our efforts to study reptile and amphibian populations in Hamilton County.

## **Frog Secretions Block HIV Infections**

by Leigh MacMillan

A new weapon in the battle against HIV may come from an unusual source – tropical frogs. Investigators at Vanderbilt University Medical Center have discovered that compounds secreted by frog skin are potent blockers of HIV infection.

The findings, reported this month in the *Journal of Virology*, could lead to topical treatments for preventing HIV transmission and reinforce the value of preserving the Earth's biodiversity.

"We need to protect these species long enough for us to understand their medicinal cabinet," says Louise A. Rollins-Smith, associate professor of microbiology & immunology, who has been studying the antimicrobial defenses of frogs for about six years. Frogs, she explains, have specialized granular glands in the skin that produce and store packets of peptides, small protein-like molecules. In response to skin injury or alarm, the frog secretes large amounts of these antimicrobial peptides onto the surface of the skin to combat pathogens like bacteria, fungi and viruses.

Rollins-Smith happens to have the laboratory next door to Derya Unutmaz, associate professor of microbiology and immunology. During a hallway chat one day, the two decided it would be interesting to investigate whether any frog peptides have activity against human viruses, specifically HIV, the focus of Unutmaz's group.

Postdoctoral fellow Scott E. VanCompernelle screened 15 antimicrobial peptides from a variety of frog species for their ability to block HIV infection of T cells, immune system cells targeted by HIV. He found several that inhibited HIV infection without harming the T cells. The Australian Red-eyed Treefrog, *Litoria chloris*, had the highest levels of peptides that block HIV infection of all species that the researchers tested. The peptides appear to selectively kill the virus, perhaps by inserting themselves into the HIV outer membrane envelope and creating "holes" that cause the virus particle to fall apart, Unutmaz said.

The November meeting will be held on Wednesday November 2<sup>nd</sup> at 7:00 pm at the Cincinnati Nature Center

"We like to call these peptides WMDs – weapons of membrane destruction," Unutmaz quips. It is curious that the antimicrobial peptides do not harm the T cells at concentrations that are effective against the virus, he notes, since HIV's outer membrane is derived from, and therefore essentially identical to, the cellular membrane. The investigators have proposed that the peptides act selectively on the virus in part because of its small size relative to cells.

The ability of the peptides to destroy HIV was enticing, but to be really effective as antimicrobial agents, they need to prevent transmission of HIV from dendritic cells to T cells, Unutmaz said. Dendritic cells, he explains, are the sentinels of the immune system. They hang out in the mucus-generating surface tissues, scanning for invading pathogens. "Their purpose in life is to capture the enemy, bring it to the lymph node – the command center – and present it to the general, the T cell, to activate a battle plan," Unutmaz says. "It's a very efficient system that has allowed us to survive many insults, pathogens, and viruses."

But HIV is a wily foe. When it is picked up at the mucosal surface by a sentinel dendritic cell, it somehow evades destruction. Instead, it hides inside the cell, waiting to invade the T cell with a Trojan Horse-like mechanism. The ability of HIV to remain hidden in the dendritic cell, avoiding destruction by circulating antibodies and immune system cells, "may explain why after 20 years we don't have a vaccine for this virus," Unutmaz says.

To test the effectiveness of the frog peptides in preventing HIV transmission, VanCompernelle first allowed cultured dendritic cells to capture active HIV. He then incubated the HIV-harboring dendritic cells with antimicrobial peptides, washed the peptides away, and added T cells. "Normally the dendritic cell passes the virus to the T cell, and we get very efficient infection of the T cell," Unutmaz says. "But when we treated the dendritic cells with peptides, the virus was gone, completely gone. This was a great surprise."

The finding was puzzling, he explains, since the prevailing notion is that HIV captured by dendritic cells is hidden and protected. The investigators currently are using imaging technologies to test the hypothesis that HIV is actually cycling

to the dendritic cell surface. "We think maybe it's popping its head out, looking around for a T cell, and then going back inside to hide until it cycles out again," Unutmaz said. If peptide is present outside the cell, "it targets the virus that pops up and kills it." Preliminary experiments suggest that the hypothesis is correct. "This is very exciting, as it suggests that these peptides could be very effective since the virus now has nowhere to hide," Unutmaz says. "And if this cycling is really happening, we may be able to generate a vaccine that will target virus captured by dendritic cells."

The frog peptides are an exceptional tool for probing "what the virus knows about the dendritic cell that we don't know," Unutmaz added. "How does HIV manage to survive and cycle back and forth to the cell membrane? If we can understand that, we'll find the gaps, and that will open a whole new universe of targets for intervention."

The investigators learned this week that the American Foundation for AIDS Research will fund their continuing quest to understand how the frog peptides kill HIV in dendritic cells. Their plans include imaging how the peptides work, screening additional frog peptides for activity, and testing peptides on a mucosal cell system to study the feasibility of developing them as prophylactics against HIV infection.

"If we are able to learn the mechanisms these peptides are using to kill HIV, it might be possible to make small chemical molecules that achieve the same results," Unutmaz says. Such chemicals would be more practical as therapeutic microbicides.

"This study is a great example of how collaboration across disciplines leads to big discoveries," Unutmaz says. Other members of the department of microbiology and immunology assisted the investigators by providing viruses for testing. The team found that membrane-coated viruses were susceptible to destruction by the frog peptides, but non-coated viruses, such as reovirus and adenovirus, were not affected.

R. Jeffery Taylor, Kyra Oswald-Richter, Jiyang Jiang, Bryan E Youree, Christopher R. Aiken and Terence S. Dermody at Vanderbilt are co-authors of the study. The research was supported by the National Institutes of Health, the Elizabeth B. Lamb Center for Pediatric Research, and the National Science Foundation.

The November meeting will be held on Wednesday November 2<sup>nd</sup> at 7:00 pm at the Cincinnati Nature Center

### Classified Advertising Policy

GCHS Members may run a free classified ad of 7 lines or less at no charge for an unlimited time; however, the ad will be canceled after one month unless the editor is informed to continue it. Please include scientific names for the animals with your ad as well as your phone number and area code. Ads of up to 7 lines for non-member are \$2 per issue; ad charges for items more than 7 lines long are as follows:

Business card size	\$3 per issue
1/4 page	\$6 per issue
1/2 page	\$10 per issue
Full page	\$20 per issue

**The GCHS is not liable for the quality of the merchandise advertised. The Society also reserves the right to refuse any ad considered inappropriate.**

### Requirements for Submitting Articles to the Forked Tongue

Articles can be submitted via 3.5" floppy disk or hard copy to Editor, GCHS 11470 Gatch Hill Road, Aurora, IN 47001.

Articles may be e-mailed to Grady Calhoun at [gradycalhoun@earthlink.net](mailto:gradycalhoun@earthlink.net).

Black and white photographs can be included with articles. Photo submissions should include your name, phone number, and description of photo on the back. Photos can be returned.

All time dependent submissions must be in the editors possession no later than the meeting previous to the demaled publication.

### Classifieds

Lost a Beloved Reptile? Any Species: We can find it! Guaranteed results. Call Wolf 513-659-9616.

For Sale: 0.0.6 captive bred and born **Northern** Blue Tongue skinks. Born 7/2/05. All eating great! Come from dynamite parents. \$100 each, \$175/2. Call Grady at (812) 926 1206.

For Sale: 0.2 Captive bred and hatched grey-banded king snakes, Blair's phase. \$75 each. Hatched 7/19/05. Eating live pinkies. Call Grady at (812) 926-1206.

Rats and Mice for sale. Reasonable price. Call Jesse or Tom (513) 876-0579.

For Sale: 3.3 Normal Adult Okeetee Corn Snakes \$50 each. 2.1 Banana California Kingsnakes, adult proven breeders, \$100 each. 0.0.10 Cornsnake hatchlings of last year, \$30 for amelanistic, \$25 for normals. Call Mike Matthews at (513) 734-1336.

For Sale: 3.3 South Carolina Corn Snakes (*elaphe guttata guttata*). These were bred by me, and are approx. 1.5 years old. All are nice looking, but a few have exceptional orange and red coloring, and all are feeding very aggressively on f/t mice. I am asking between \$40-\$50 each. Very healthy snakes. Feel free to call me at 228-0293 or e-mail at [kdobrien76@aol.com](mailto:kdobrien76@aol.com) with any questions. Ask for Kevin.

Discount: A 10% discount is offered to all card-carrying members of the GCHS at *All Creatures Animal Hospital*. Dr. Dan Meakin, All Creatures, 1894 Ohio Pike, Amelia, OH 45102, 513-797-7387.

Discount: A 10% discount is offered to all card carrying members of the GCHS at Dr. Dahlhausen's Veterinary Clinic, 5989 Meijer Dr., Suite 2, Milford, Ohio 513-576-0131

(Number to left of decimal indicates males; number to right of decimal indicates females; number to right of second decimal indicates number of unknown sex. For example, 3.2.1=3 males, 2 females, and 1 unsexed specimen)

The November meeting will be held on Wednesday November 2<sup>nd</sup> at 7:00 pm at the Cincinnati Nature Center

### Currently Held Positions

President	Grady Calhoun	(812) 926-1206	Vice President	Dean Alessandrini	(513) 347-0099
		(513) 564-6041	Editor	Grady Calhoun	(812) 926-1206
Treasurer	Peggy Fille	(513) 528-4452			(513) 564-6041
Sergeant-at-Arms	Bruce Fille	(513) 528-4452	Education Committee Chairman		
Advisor	Vacant		Peggy Fille		(513) 528-4452
Secretary	Kyle Becker	(513) 831-4898			

### About the GCHS

The Greater Cincinnati Herpetological Society holds monthly meetings which typically consist of a short business section, a refreshment intermission, and a program related to herpetology. Both members and nonmembers are invited to attend. Membership is open to anyone with an interest in reptiles and amphibians. New members may sign up by mail or at the monthly meetings. Members receive monthly issues of *The Forked Tongue* and free classified advertising. Annual dues should be directed to the secretary at the society's mailing address, according to the rates below:

Student	\$10.00	Corresponding	
	\$10.00		
Individual	\$15.00	Sustaining	\$25.00
Family	\$20.00	Institutional	\$30.00
Contributing	\$50.00		

### Why Be a Member?

Receive monthly issues of *The Forked Tongue*

- Meet individuals knowledgeable about herpetoculture
- Have access to captive-bred herps and feeder animals
- Participate in society-sponsored field trips, and outings.
- Receive a 10 percent discount on herp-related items and services when you show a valid membership card at the following establishments:

Delhi Pet Center	(513) 451-4015
Kentucky Reptile Zoo	(606) 663-9160
Harrison Pet Center	(513) 367-1115
All Creatures Animal Hospital	(513) 797-7387
Dr. Dahlhausen's Veterinary Clinic	(513) 576-0131.

P.O. Box 14783  
Cincinnati, OH 45250

The November meeting will be held on Wednesday November 2<sup>nd</sup> at 7:00 pm at the Cincinnati Nature Center