

## Heartworm Hero: John W. McCall, M.S., Ph.D.

### A Passion for Heartworm Research

“I think I was born a researcher,” says John W. McCall, M.S., Ph.D., professor emeritus at the University of Georgia College of Veterinary Medicine. Though he taught veterinary parasitology, research – particularly heartworm disease research – has been his passion for the last 43 years.

When he began working at the university in 1970, Dr. McCall was not overly familiar with *D. immitis*; however, he quickly became immersed in research and product testing. “I knew heartworms and heartworm disease were being found throughout the world and that it was a serious disease,” he recalls. “But at that time, there didn’t seem to be much known about it. So I thought that heartworm research was a good thing to do, and I was in a good position to do it.”

### Meeting veterinarians’ needs

As a lifetime member of the American Heartworm Society and an ex officio member of its executive board, Dr. McCall has spoken frequently to veterinarians about how heartworm disease affects their patients and clients. As a researcher, his focus on select parasites such as heartworms differs from that of a practicing veterinarian, who must be adept at diagnosing and treating many illnesses.

“I get to delve more deeply into heartworms than any veterinarian could,” says Dr. McCall. “A practicing veterinarian can’t know as much as I do about heartworm disease, because I spend most of my time thinking about it. I can look for new drugs and new diagnostic tests; I can study the vectors that transmit the disease. Then I try to help develop the products veterinarians need to diagnose, prevent and treat it.”

### Research highlights

Though he is semiretired, Dr. McCall continues to perform heartworm research, helping drug companies register their products and diagnostic companies evaluate heartworm tests.

As the author of 172 peer-reviewed articles, Dr. McCall is one of the foremost authorities on heartworm disease. For example, he conducted research combining certain heartworm preventives with the antibiotic doxycycline to treat *Wolbachia*, a bacteria found in heartworms. This was significant, not only because of the combination’s efficacy against heartworm at different stages, but because doxycycline blocked the transmission of the parasites, even those with genes resistant to heartworm preventives.

Dr. McCall has used his expertise with heartworms to combat other filarial worms that cause diseases in humans. Specifically, he worked with the World Health Organization and the Bill and Melinda Gates Foundation to formulate drugs to treat elephantiasis and onchocerciasis, or river blindness, caused by the parasitic worm *Onchocerca volvulus*. Both are devastating human diseases found in countries with tropical environments.



“There are many biological similarities between these filarial parasites of people and the heartworm, which is also a filarial parasite,” says Dr. McCall. “Most drugs that are effective against human filarial parasites are also effective against heartworm, and vice versa. This allows us to develop drugs for both human and animal filariae using many of the same laboratory models and methods.”

### Think 12 in practice

Dr. McCall urges pet owners to protect their pets against heartworm disease by using a heartworm preventive that kills worms in the early larval stages. “Prevention is so easy and inexpensive,” he says. “Heartworm preventives are very safe drugs.” When heartworms reach adulthood, they are much more difficult to get rid of, and an arsenic compound often must be used. The compound kills them; however, these large, dead adult worms can lodge in the dog’s lungs, causing life-threatening emboli.

“It’s important for owners of dogs, cats and even ferrets to put the pet on a heartworm prevention program when the animal is no more than 8 weeks old,” says Dr. McCall. “The animal needs to get the medication continually. The drugs are so safe, and the disease is so severe, owners should not risk forgetting to get their pets back on the drug if, for example, they inadvertently miss one or more doses during the year.” He adds that pet owners should have their pets tested for heartworm at least once a year.

Though he has earned a relaxing retirement after a long, productive career, Dr. McCall doesn’t seem interested in resting. A pioneer in heartworm research, he continues his career-long battle against heartworm disease.