

Regional

McCracken knows ulcers and parasitic worms

Ulcers are more common than one may think, not only among humans but also among other animal species. The discovery that ulcers were caused by a bacterium was one of the major revolutions in biology of the 20th century. Despite progress in their treatment, ulcers continue to be studied by scores of scientists around the world.

One of those scientists is Vance McCracken, an assistant professor in the department of biological sciences at Southern Illinois University Edwardsville. Born in Martin, Tenn., he received his bachelor's degree in Spanish from the University of Tennessee at Martin, a master's degree, also in Spanish, from the University of Nevada at Reno, and his doctoral degree in biology from the University of Illinois at Urbana-Champaign.

One of the major recent discoveries about the bacterium that causes ulcers is that it can also cause cancer. And that is a reason for concern. The bacterium in question is called *Helicobacter pylori* and is carried by over 50 percent of the world's population.

"Ten percent of those go on to have severe problems including severe gastritis and cancer," McCracken said. "In Africa, for example, the overwhelming majority of people are infected with *Helicobacter*, but Africans do not get such a large proportion of cancers compared to everyone else, and it is probably because of the parasitic worms they carry, which are actually protective. This is what we call the African Paradox."

The carrying of this bacterium seems to be related to general cleanliness. "With

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increased cleanliness we seem to have gotten rid of the *Helicobacter* in large parts of the developed world, but it still gets picked up," McCracken said.

In order to deal with ulcers, some have suggested the use of natural foods in order to lessen the effects of *Helicobacter*.

"There are lots of people working on it. In fact, somebody I do some collaboration with is looking at some different possible natural compounds that may be used as different kinds of antibiotics, and I would certainly be interested in looking at some of those," McCracken said. "Broccoli has been one, garlic compounds I believe are some others. It is being done and most importantly, you want to isolate the mechanism."

He added that much of the work focuses on how to prevent the organism from colonizing, as well as how to kill the organism.

Although McCracken has not been working on that specific topic, he is aware of it and other scientific studies aimed at finding other organisms that can prevent the colonization of the digestive tract by *Helicobacter*.

"Their cell culture experiments have shown that they can help down-regulate some of the more inflammatory responses that you would see with infections," he explained. "So, I think that there is still promise for this."

It is interesting that ulcers are not only



Shan Lu/SIUUE

Dr. Vance McCracken looks up from his microscope work.

found among humans but also among many other animal species. Many of these ulcers are caused by bacterium, which basically tells us that this may have been a very natural condition in the original human populations.

"There are people who make their whole

among most mammals. Large cats and even whales have it. Birds carry it, too.

"There are some that don't infect just the stomach, but also the intestine and can get into the liver as well," explained McCracken. "We have studied some of those. Some of them may be involved in some intestinal diseases. We know that some of them certainly can cause inflammatory bowel disease in mice. Some of them may be implicated in some human disease in the intestine as well as in the stomach."

Currently McCracken and a graduate student in his lab are studying a *Helicobacter* species that infects geese like the ones that are found on the SIUE campus.

"We have been able to tell by PCR, a molecular technique, that this organism is carried by some of our geese, and so we get fecal samples and pick that," McCracken said. "And we know that it can cause diarrhea in humans, and we have been trying to develop a model of that disease to see how severe a problem it may be because it has been associated with other diseases in humans, but nobody has really characterized this organism, how it causes disease and what are the virulence factors that it may have."

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careers studying how the *Helicobacter* strains have more or less co-evolved with different populations and co-migrated with different populations as they have moved to different parts of the world," McCracken said. "It has been with humans forever."

Different species of *Helicobacter* are found