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Whales and dolphins can have stomach ulcers, too

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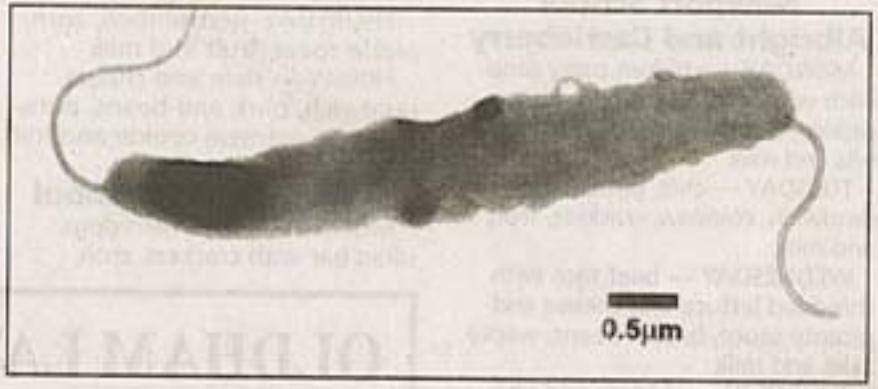
Last October we reported in *The Sun* that the 2005 Nobel Prize in Medicine had been granted to scientists involved in the discovery that stomach ulcers were caused by bacteria.

Now a new discovery may prove that stomach ulcers are widespread in the animal kingdom. A group of scientists from Massachusetts Institute of Technology, University of Illinois, Shedd Aquarium in Chicago and private research institutes in both Hawaii and Boston have reported in the Journal of Clinical Microbiology the discovery of a stomach ulcer-related bacterium in several species of marine mammals.



Dr. James Fox | Massachusetts Institute of Technology

The bacterium that causes ulcers in marine mammals is shown in this photo.

The new species, named Helicobacter cetorum, belongs to the same genus as the one that produces stomach ulcers in humans. It was found in the main stomach of two wild, stranded Atlantic white-sided dolphins and in the feces of three other captive marine mammals: a Pacific white-sided dolphin, an Atlantic bottlenose dolphin ("Flipper") and a beluga whale.

All the studied individuals had shown signs typical of having ulcers — reduced appetite, weight loss, intermittent regurgitation, and lethargy.

The scientists decided to study both the esophagus and the stomachs of these animals. Dolphins and whales present a special challenge when studied with an endoscope because they have multi-chambered stomachs like their distant relatives, cattle. Endoscopes are devices with a light attached, used to look inside a body cavity or organ. The scope is inserted through a natural opening, such as the mouth, and the medical procedure using any type of endoscope is called endoscopy.

The researchers observed in the esophagus and forestomach of some of these marine mammals the typical lesions and erosions found among humans with ulcers. A tissue examination of the stomach revealed the typical signs of gastritis. Also in the tissue was a spiral-shaped bacterium with a flagellum, Helicobacter. They called this new species Helicobacter cetorum, because it was found in whales and dolphins, all of them grouped under the name of cetaceans.

A DNA analysis confirmed that this new species of bacterium was closely related to H. pylori, the one causing ulcers among humans. Since the discovery of Helicobacter in humans, scientists have been looking for this bacterium in other animal species. It has been found in wild animals such as cheetahs and in pets such as dogs, cats and ferrets. Helicobacter has been discovered in other sea mammals as well including seals, sea otters, and sea lions.

PLEASE SEE **WHALES, A9**

WHALES: Tides may be a factor

FROM PAGE A8

This new discovery can also be instrumental in explaining one of the most intriguing natural phenomena: whale and dolphin strandings. For decades biologists have been puzzled by the massive strandings of these animals without apparent reasons. Some had suggested that the strandings were cause by parasites in the ears that disable the echolocation abilities of these animals to navigate.

Another hypothesis was that these animals becamse dissoriented by anomalies in the magnetic field of the earth. However, a recent study by one of us (Romero) and his student Jose Torres Mercado, showed no correlation of that happening at least in the Caribbean. Another intriguing possibility is that strandings may be influenced by the tides and that is being investigated with the help of scientists at the University of California at Los Angeles.

However, the possibility that many dolphins and whales strand because of ulcers that impair their ability to eat, sounds a very plausible explanation for many of these intriguing uncidents.

For more information contact the ASU Department of Biological Sciences at biology@astate.edu.

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