

Is The Hippopotamus The Closest Living Relative To The Whale?

Mar. 19, 2009 — Hippos spend lots of time in the water and now it turns out (or researchers argue), they are the closest living relative to whales. It also turns out, the two are swimming in a bit of controversy.



Jessica Theodor, an associate professor in the Department of Biological Sciences at the University of Calgary, and her colleague Jonathan Geisler, associate professor at Georgia Southern University are disputing a recent study that creates a different family tree for the hippo.

That research was published in *Nature* in December 2007 by J. G. M. Thewissen, a professor at Northeastern Ohio Universities College of Medicine, and his colleagues. Thewissen says that whales are more closely linked to an extinct pig-like animal, often known as India's pig or Indohyus, while hippos are closely related to living pigs.

But this isn't accurate according to Theodor.

"What Thewissen is saying is that Indohyus is the closest relative of whales - and we agree. Where we think he is wrong, is that he is saying that hippos are more closely related to true pigs than they are to whales," says Theodor. "This contradicts most of the data from DNA from the last 12 or 13 years. Those data place hippos as the closest living relative to whales."

She says Thewissen did not use DNA evidence, instead used fossil evidence alone to create a family tree and reach the conclusion that hippos have more in common with pigs than whales.

"And the reason their tree is so different is simple: by excluding all the DNA information they left out all the data that shows a strong relationship between whales and hippos."

Theodor's rebuttal of Thewissen's work will appear in *Nature* on Thursday, March 19.

The controversy began after the new fossil of Indohyus, was discovered and written about by Thewissen and his group. This animal lived around 48 million years ago, lived in the water and fed on land.

When biologists study family trees, they traditionally rely on morphology, in other words, the shape of bones. More recently, the DNA revolution means that scientists can use DNA data as another tool to reconstruct family trees, but DNA data can't be used all the time because DNA is not available for most fossils.

"In order to get the best understanding, researchers combine the two sources of data in a single analysis. But what Thewissen and his group did, was leave one of the major ones out," says Theodor.

Before the widespread use of DNA data, hippos had been thought to be closely related to pigs, but DNA data show that whales are closely related to hippos. Geisler and Theodor argue that leaving out the DNA data not only ignores important information, it implies that the evolution of swimming evolved independently in hippos and whales, when it may have evolved only once in a common ancestor.

