

Controversial worm keeps its position as the progenitor of mankind

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Researchers are arguing about whether or not the *Xenoturbella bocki* worm is the progenitor of mankind. But new studies, involving Swedish researchers from the University of Gothenburg and the Gothenburg Natural History Museum, indicate that this is actually the case. Credit: Hiroaki Nakano

Researchers are arguing about whether or not the *Xenoturbella bocki*

worm is the progenitor of mankind. But new studies indicate that this is actually the case. Swedish researchers from the University of Gothenburg and the Gothenburg Natural History Museum are involved in the international study. The results have been published in *Nature Communications*.

The *Xenoturbella bocki* worm is a one-centimetre long worm with a simple body plan that is only found regularly by the west coast of Sweden. The worm lacks a brain, sexual organs and other [vital organs](#).

Zoologists have long disagreed about whether or not the *Xenoturbella bocki* worm holds a key position in the animal tree of life. If it does have a key position, it is very important for the understanding of the [evolutionary development](#) of organs and [cell functions](#), such as [stem cells](#), for example. The question is therefore not only important in the field of biology, but also for potential [biomedical applications](#).

"It's absolutely fantastic that one of the key evolutionary organisms in the animal kingdom lives right on the doorstep of the University of Gothenburg's Centre for Marine Research. And this is actually the only place in the whole world where you can do research on the creature," says Matthias Obst from the Department of Biological and Environmental Sciences at the University of Gothenburg.

[Genetic studies](#) indicate that the *Xenoturbella bocki* worm belongs to the group of deuterostomes, the exclusive group to which also man belongs.

"So maybe we're more closely related to the *Xenoturbella bocki* worm, which doesn't have a brain, than we are to lobsters and flies, for example," says Matthias Obst.

Even though the worm does not particularly resemble man, development biologists have referred to the fact that the [early embryonic development](#)

of the worm may display similarities with the group to which man belongs. But the problem has been that no one has previously been able to see the development of the creature.

But now a group of researchers at the Sven Lovén Centre for Marine Sciences and the Gothenburg [Natural History Museum](#) have succeeded in doing what no one else has done before: to isolate newly born little *Xenoturbella bocki* worms.

"And these new-born worms revealed absolutely no remnants at all of advanced features! Instead, they exhibit similarities with quite simple, ancient animals such as corals and sponges," says Matthias Obst.

The studies also reveal the value of the University of Gothenburg's marine stations for important basic research. "The Lovén Centre at the University of Gothenburg is the only place in the whole world where you can study this paradoxical animal (in Swedish called 'Paradox worm'). That's one reason why researchers come from all over the world to Gullmarsfjorden to solve one of the great mysteries in the evolution of animal life," says Matthias Obst.

More information: [DOI:10.1038/ncomms2556](https://doi.org/10.1038/ncomms2556)

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