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Water bears do not have extensive foreign DNA, new study finds

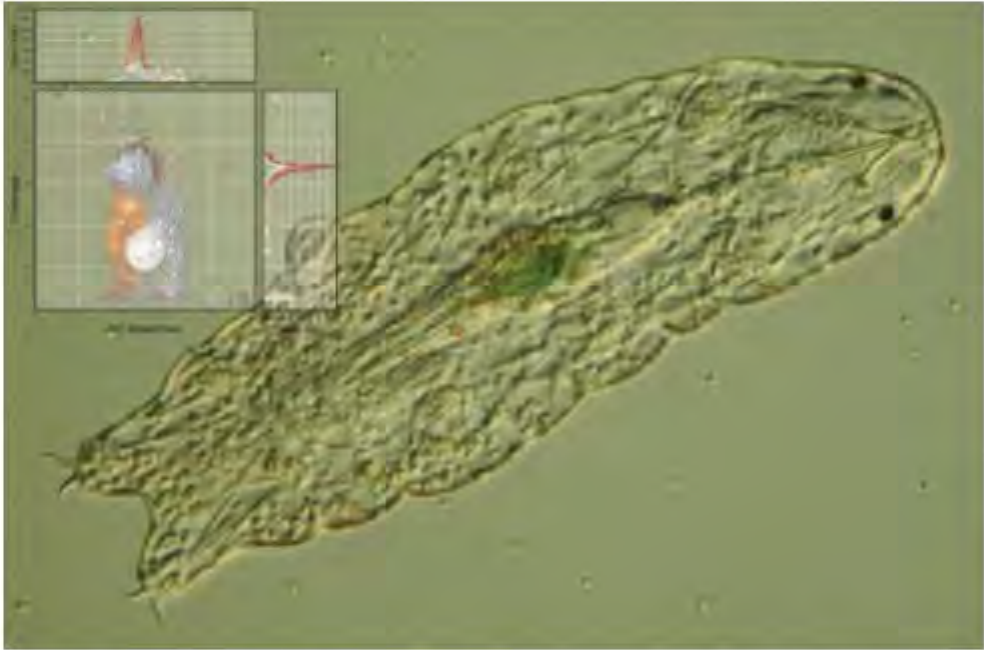
Date: March 28, 2016
Source: University of Edinburgh

Summary: Tardigrades, also known as moss piglets or water bears, are eight-legged microscopic animals that have long fascinated scientists for their ability to survive extremes of temperature, pressure, lack of oxygen, and even radiation exposure. Tardigrades have not acquired a significant proportion of their DNA from other organisms, a new study shows.

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FULL STORY



Tardigrades have not acquired a significant proportion of their DNA from other organisms, a new study shows.

Credit: Aziz Aboobaker and Mark Blaxter

Tardigrades, also known as moss piglets or water bears, are eight-legged microscopic animals that have long fascinated scientists for their ability to survive extremes of temperature, pressure, lack of oxygen, and even radiation exposure.

Now, a study has found that, contrary to a previous controversial proposal, tardigrades have not acquired a significant proportion of their DNA from other organisms.

Instead, new analysis from the University of Edinburgh shows that nearly all of what was proposed to be foreign DNA was simply bacterial contamination.

Controversy had been prompted by a November 2015 study suggesting that one-sixth -- some 17 per cent -- of the DNA of freshwater tardigrades could be traced to transfers from bacteria.

The scientific world was abuzz with speculation following this suggestion that tardigrades had the ability to pick up and reuse DNA from other species.

Soon after, the Edinburgh team used DNA sequence data from the same species and found that almost all of the proposed foreign DNA was in fact contamination.

In their latest study, the same team conducted careful analysis of both sets of data using new computational tools. Their findings suggests that less than 1 per cent of tardigrades' genes are likely to have been borrowed from other species. This number is unsurprising -- even humans have a few borrowed genes.

Their study is published in *Proceedings of the National Academy of Sciences*.

Professor Mark Blaxter, of the University of Edinburgh's School of Biological Sciences, who led the study, said: "What would in decades past have taken many months to sort out became the focus of experts around the world and has been swiftly resolved. We hope this paper will finally correct the scientific record. Tardigrades are amazing organisms, but these suggestions about their DNA were a step too far, even for their eight legs."

Story Source:

The above post is reprinted from materials provided by [University of Edinburgh](#). Note: Materials may be edited for content and length.

Journal Reference:

- 1. Georgios Koutsovoulos, Sujai Kumar, Dominik R. Laetsch, Lewis Stevens, Jennifer Daub, Claire Conlon, Habib Maroon, Fran Thomas, Aziz A. Aboobaker, Mark Blaxter. **No evidence for extensive horizontal gene transfer in the genome of the tardigrade *Hypsibius dujardini*.** *Proceedings of the National Academy of Sciences*, 2016; 201600338 DOI: 10.1073/pnas.1600338113

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