

Hemimastigotes found to represent a major new branch on evolutionary tree of life

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A team of researchers at Dalhousie University has found evidence that suggests hemimastigotes represent a major new branch of evolutionary life. In their paper published in the journal *Nature*, the group describes

their genetic study of the dirt-dwelling microbe.

The researchers note that hemimastigotes have been known to scientists since the 19th century, but it was not until very recently that technology has allowed scientists to learn how different they are from other eukaryotic [life](#) forms. The researchers report that one of their team members, Yana Eglit, had been digging in a local park just outside of Halifax. Intrigued by the [microbes](#) she found in the dirt, she isolated a group that appeared to be hemimastigotes. After letting the microbes reproduce in a small dish filled with nothing but dirt and water for a month, she collected samples that the team used to conduct a genetic analysis.

The researchers report that the hemimastigotes are so different from anything observed before that fungi and animals are actually more closely related. They describe the microbes as being approximately two-hundredths of a millimeter long—they move using over a dozen flagella. And they survive by eating other microbes. It was the latter characteristic that led the team to name the species *Hemimastix kukwesjijk*, in honor of a hairy man-eating ogre from Mi'kmaq (native people in Nova Scotia) folklore.

The researchers describe hemimastigotes as representing a major new branch on the evolutionary tree—standing above the level of a kingdom. The team was able to analyze hundreds of samples, thanks to Eglit's efforts in getting them to reproduce, which provided a very clear understanding of the genetic makeup of the microbes. They also suggest their findings fill some evolutionary holes in the tree of life. They also note that in addition to learning about how different hemimastigotes truly are from other life forms, the work by Eglit also offers a lesson for other researchers in how to grow such species in large enough volume to allow for such thorough study.

More information: Gordon Lax et al. Hemimastigophora is a novel supra-kingdom-level lineage of eukaryotes, *Nature* (2018). [DOI: 10.1038/s41586-018-0708-8](https://doi.org/10.1038/s41586-018-0708-8)

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