

Life on Earth may date back 3.95 bn years: study

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Rudimentary life may have existed on Earth 3.95 billion years ago, a time when our infant planet was being bombarded by comets and had hardly any oxygen, researchers said Wednesday.

A team presented what they say is the oldest-known fossil evidence for life on the Blue Planet—grains of graphite, a form of carbon, wedged

into ancient sedimentary rocks in Labrador, Canada.

The previous most ancient life traces were reported in March, from a site in Quebec estimated at between 3.8 billion and 4.3 billion years old, though an author of the new study called that dating process "highly controversial."

"This is the oldest evidence," Tsuyoshi Komiya of The University of Tokyo insisted in an email exchange with AFP.

"Our samples are also the oldest supracrustal rocks preserved on Earth"—a type similar to the formation which contained the Quebec samples.

Fossil evidence for early organisms is scarce, and rocks that remain from that period are often poorly preserved.

A key difficulty for scientists on a quest to find the oldest life on Earth is proving that organic remains were produced by living organisms rather than geological processes.

This field of study is aimed not only at pinpointing the start of life on our planet, but also to shed light on the possibility of life having existed—or still existing—on other [planets](#) such as Mars.

For the new study, Komiya and a team studied graphite, a form of carbon used in pencil lead, in rocks at Saglek Block in Labrador, Canada.

They measured its isotope composition, the signature of chemical elements, and concluded the graphite was "biogenic"—meaning it was produced by living organisms.

The identity of the organisms, or what they looked like, remains a mystery.

"We will analyse other isotopes such as nitrogen, sulphur and iron of the organic matter and accompanied minerals to identify the kinds of organisms," said Komiya of the next step.

"In addition, we can estimate the environment" in which the [organisms](#) lived by analysing the chemical composition of the [rock](#) itself.

If the findings are accurate, it means life took hold on Earth just a geological second after its formation some 4.5 billion years ago.

Before the Quebec fossils, which were also described in *Nature*, the oldest traces of [life](#) were found in Greenland's ice cap and dated to 3.7 billion years ago.

More information: Takayuki Tashiro et al. Early trace of life from 3.95 Ga sedimentary rocks in Labrador, Canada, *Nature* (2017). [DOI: 10.1038/nature24019](https://doi.org/10.1038/nature24019)

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