

Searching for signs of Earth's earliest life more than 'a needle-in-the-haystack' problem

The search for signs of Earth's earliest forms of life isn't quite like looking for dinosaur bones protruding out from desert outcrops. The oldest species on our planet were microscopic, nothing more than itty-bitty specks. Detecting them, and verifying their identity, is a complicated task that often relies not only hunting down tiny remains but also on chemistry and perceiving how those microorganisms modified their environments.

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Picking out the evidence of Earth's earliest [life](#) is more than a needle-in-a-haystack problem. The entire planet is the metaphorical haystack, while the needles are no more than microscopic cells or faint chemical traces. Even when scientists can pin down possible candidates, it can be hard to know for sure when something is a signature of ancient life rather than a plain-old geologic phenomenon.

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"These studies have given us an idea of how to search other planets," [geologist Alison] Olcott says, helping to refine what lines of evidence to look for and collect. Those plans are already underway, to be launched with the Mars 2020 Perseverance rover this year. "Decades of fighting over evidence and interpretations on Earth, have hopefully prepared us to mount a search for potential signs of life elsewhere."

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