

Is there life on Mars? We're finally starting to wonder again

5 October 2015, by Seth Shostak



Credit: 20th Century Fox

The most interesting thing we wonder about Mars is this: does it house Martians? This week, some highly technical research touted during a NASA press conference has given hope for an answer.

Mars is arguably more seductive than Mata Hari. For early astronomers, it was the only planet on which they could see surface features. More out of hope than reason, they compared these features to the topography of Earth. The two worlds were evidently similar, and few scientists doubted that the [red planet](#) was carpeted in biology.

In the 1970s, it became possible to send spacecraft to the surface of Mars, and NASA enthusiastically did so. Two highly sophisticated, life-seeking landers were sent to the red planet in what was known as the Viking mission. The smart money wagered that these rocket-borne biology labs, once landed, would open their electronic eyes and behold Martians. The celebrated American scientist Carl Sagan had ventured: "Large organisms, possibly detectable by the Viking lander cameras, are not only possible on Mars; they may be favoured."

What the cameras actually saw was a desiccated landscape of rock and sand. Nothing changed and nothing moved, save for windblown dust. There were no clear signs of life – even microbial life.

Their experiments done, the Viking landers slowly died in the bitter cold of Mars, and centuries of optimistic speculation died with them. The red planet was apparently a dead planet.

However, that disappointing verdict may be wrong. For decades, evidence has mounted that the environment of Mars used to be far more temperate than now. Its atmosphere was thicker, temperatures were warmer, and rivers, lakes and an ocean dotted its landscapes. Life could have sprung up and flourished.

The significance of NASA's press conference this week is that the descendants of any ancient life could still be at home on the planet, and within easy reach of a new generation of landers.

The agency presented news about dark streaks that appear on the walls of some Martian craters and cliffs during warm weather, known as recurrent slope lineae. Scientists reported that they were caused by briny, liquid water staining the dry sand. It's reasonable to think that much of the water comes from aquifers, extensive underground reservoirs that huddle just below Mars's dry surface.

Indeed, this is such an appealing idea that it may sway NASA's approach to searching for life on Mars. After Viking, the space agency concluded that a hunt for biology in only a few places was expensive and inconclusive. It was misled by the fact that on Earth you can find life everywhere.

Consequently, NASA shifted gears and began searching for habitats, such as the beds of ancient lakes, where it might find the fossil remains of life that is long gone. By looking for extinct rather than

extant life, it could sample all of Martian geologic history.

NASA fans call that approach "methodical". But critics call it "too conservative", and it's now possible that the lineae story will prompt a reappraisal of this longstanding philosophy.

The lineae are like Xs on a treasure map, obvious places to look for life, and begging to be explored. And if NASA doesn't wish to send robots to these tantalising spots, some other organisation may.

Finding life in hidden reservoirs beneath the crimson sands of Mars would be revelatory. If the biochemistry of these microbes was the same as ours, we would suspect that rocks from long ago carried their ancestors to Earth. And that would mean – deep in our DNA – that we are Martians.

But if not, if we find life that's unrelated to ours, then we'll know of two worlds that have spawned biology – and will confront the unavoidable fact that the universe is teeming with living things.

Of course, this water would be useful for human expeditions to the red planet. But the truly revolutionary thing is that the lineae are signposts telling us where we should search for Martian natives. All we need do is land a robotic craft near one of these features, scoop up the salty mud, put it under a microscope, and check for anything that wiggles. Voila: [life](#) in space.

Provided by SETI Institute

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