



**Paul Rodgers** (<http://www.forbes.com/sites/paulrodgers/>) Contributor

*I cover general science news.*

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# Mars: Curiosity Rover Finds Little Green ...

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Well, not men, but possibly bacteria, or a similar but long-extinct life form.

In either case, [Nasa](http://www.jpl.nasa.gov/news/news.php?feature=4413) (<http://www.jpl.nasa.gov/news/news.php?feature=4413>)'s announcement yesterday (16 Dec) would go down in history as the moment when humans discovered life on Mars.

The claim is based on the Curiosity rover's discovery of unexpectedly high levels of methane – described as a “burp”, though a more vulgar term could apply

– rising on two occasions from a 280 sq metre (3,000 sq ft) area. Intervening tests showed no such increase.

The levels peaked ten times higher than the background level of methane in the Martian atmosphere.

“This temporary increase in methane – sharply up and then back down – tells us there must be some relatively localized source,” said Sushil Atreya of the University of Michigan, Ann Arbor, a member of the Curiosity rover science team. “There are many possible sources, biological or non-biological, such as interaction of water and rock.”





Curiosity exploring the Gale Crater (Credit: Nasa)

But on Earth, methane is most commonly produced by bacteria, including many of those that live in the human gut.

“What is interesting is that these spikes of methane are coming and going,” said Nasa’s Dr Paul Mahaffy. “At the moment, we can’t really tell anything but these burps are intriguing. We have to keep an open mind.”

Nasa hopes that additional tests to determine the ratios of isotopes in the methane would settle whether it was from an organic or inanimate source.

Methane, a colourless, odourless gas, is made of one carbon and four hydrogen atoms.

At least on Earth, cells that use photosynthesis to gather energy from the Sun favour different isotopes of carbon, which differ by weight depending on the number of neutrons each has.

Curiosity’s discovery, reported in the journal *Science*

(<http://www.sciencemag.org/content/early/2014/12/15/science.1261713.abstract?keytype=ref&siteid=sci&ijkey=wh80Qt3dcQZKw>), was made in the Gale Crater, 155 km (96 miles) in diameter, using a tunable laser spectrometer (<http://mars.jpl.nasa.gov/msl/mission/instruments/spectrometers/sam/>).

Earlier this month, Nasa revealed that the crater’s floor (<http://www.newscientist.com/article/dn26675-curiosity-rover-finds-ancient-lake-in-martian-crater.html#.VJHCSUswgYU>) had been repeatedly flooded with water, and that the mountain at its centre was made of sedimentary rock.

Curiosity has also discovered organic chemicals, the building-blocks of life, though those too could have been formed by inanimate chemical processes, or they could have been delivered to the surface by comets, which are known to contain them.

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Spacecraft orbiting Mars have also detected unusually high methane levels in the past, but none so dramatic as the Gale Crater emission.

However, Franck Lefevre of Latmos, an atmospheric laboratory at the French Institute Simon Laplace and his colleagues reported in *Nature* (<http://www.nature.com/nature/journal/v460/n7256/abs/nature08228.html>) in 2009 that these observed variations in the methane content of the Martian atmosphere could not be caused by atmospheric chemistry and physics.

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