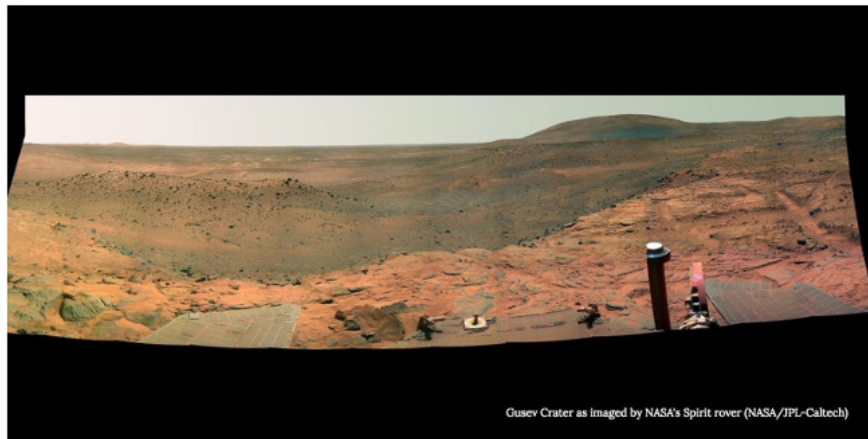


# Reveal the best place to find life on Mars

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Prominent focus is curiosity about fingers - like small silica balls taken by Spirit near self-propelled robots called " *Home Plate* " in the Gusev impact crater in April 2007. Self-propelled robot Spirit works in this area for more than 5 years to study Mars geology and atmospheric phenomena. The sister of the self-propelled Spirit, Opportunity, continues to explore the Red planet nearly 13 years after landing.



Gusev collision crater was taken by NASA's Spirit self-propelled robot.

Photo source: NASA / JPL-Caltech

Steve Ruff and Jack Farmer at the Space and Earth Exploration Department at Arizona State University compared **Home Plate** structure with structures in the Chilean hot spring called **El Tatio** , where the bacteria are known. affecting the structure of silica senders. Their findings are published in Nature Communications.

The Atacama Desert is often referred to as one of the " *Analog Mars* " locations on Earth. El Tatio's hot spring is located at an altitude of over 4200m ( *14,000 ft* ), making it one of the highest hydrothermal sites on Earth. At these altitudes, the atmosphere is thinner, so the site receives an intense wave of ultraviolet light and often depends on freezing heat even during summer. These characteristics make El Tatio - an interesting research area because it combines the harsh climate of Mars with hydrothermal activity that can survive on Mars in the ancient

past, especially when it is moist. much wetter than now. But the big question is, can life exist " *firmly* " in Mars hot springs like El Tatio?

" *We went to El Tatio in search of comparable characteristics found by Spirit self-propelled robots at Home Plate,*" Ruff said in a statement . "*The results show that conditions in El Tatio produce silica senders with different characteristics - one of any of the most silica-like senders on Earth. "*

Home Plate is a known volcanic ash deposit that has eroded over time. In April 2007, the self-propelled robot Spirit found that the silica-rich tiny bits indicating this location were right next to a hydrothermal mouth. Currently, Ruf and Fammer recommend that if these ancient Martian silica senders have the same structure as those sent to El Tatio, perhaps small pieces sharing common biological origins.



Comparison between the silica structure on Mars by observation of Spirit self-propelled robot (left) with the El Tatio structure produced by biological processes (right).Photo source: NASA / JPL-Caltech, Steve Ruff

" *In fact, bacteria play a big role in the production of special silica structures at El Tatio, giving the possibility that Mars silica structures are formed in a comparative way - or in other words, with The help of living creatures at the time,*" Ruff adds.

However, a trait on Mars that resembles a feature on Earth does not mean that they have the same process of forming and indeed, this is not the first time a self-propelled robot on Mars sees potential. fossil "biosignatures" of ancient biology - a gas that can be detected in the atmosphere, including oxygen, ozone, nitrous oxide and methane.

For example, in 2015, NASA's Curiosity self-propelled robot (rover) onto Mars captured a rock image with the same characteristics as fossil algae carpet. Although scientists have not yet suggested whether or not these mats, evidence of ancient life on the Red Planet - after all they are only geological structures - we know before, onions. This crystal is much wetter now. So, if life appears, perhaps some ancient Martian biology has left fossil imprints behind.

For example, the ancient place frequented by Spirit self-propelled robots, the Gusev impact crater is still at the top of the list of potentially repulsive places for NASA's self-propelled robot mission in 2020 to investigate "biosignature" silica. potential. Therefore, we will wait and review before making any correlation between the

structure in El Tatio and the ancient hydrothermal site on Mars.

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