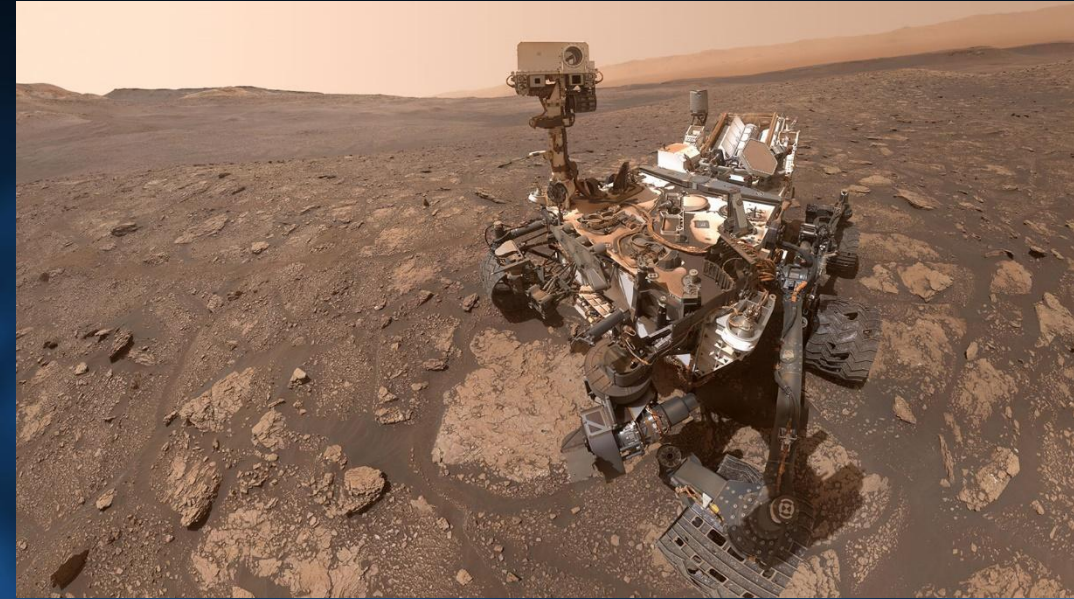


# Life on Mars: Are we digging deep enough?

**Amino acids can be created by life and by non-biological chemistry and finding certain amino acids on Mars would be considered a potential sign of ancient martian life.**

- To test the resilience of some amino acids on Mars surface, research scientists mixed several types of amino acids in simulated martian soil and sealed the samples in test tubes. Some samples were kept at room temperature, while others were chilled to  $-55\text{ }^{\circ}\text{C}$ . The samples were blasted with gamma radiation, simulating 800 million years of radiation exposure in the martian surface rocks.
- Results suggest that amino acids are destroyed by cosmic rays in the martian surface rocks and regolith at much faster rates than previously thought.
- At the depths that current Mars rover missions drill to, amino acids could be completely destroyed over relatively short geologic timescales, indicating some potential challenges for the search of ancient amino acids and other possible organic biosignatures in the top 2 m of the martian surface.



*NASA's Curiosity Mars rover took this selfie at a location nicknamed "Mary Anning" after a 19th century English paleontologist. Curiosity snagged three samples of drilled rock at this site on its way out of the Glen Torridon region, which scientists believe was a site where ancient conditions would have been favorable to supporting life, if it ever was present. Credits: NASA/JPL-Caltech/MSSS*