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THURSDAY, JULY 9, 2026 | COURIERPRESS.COM

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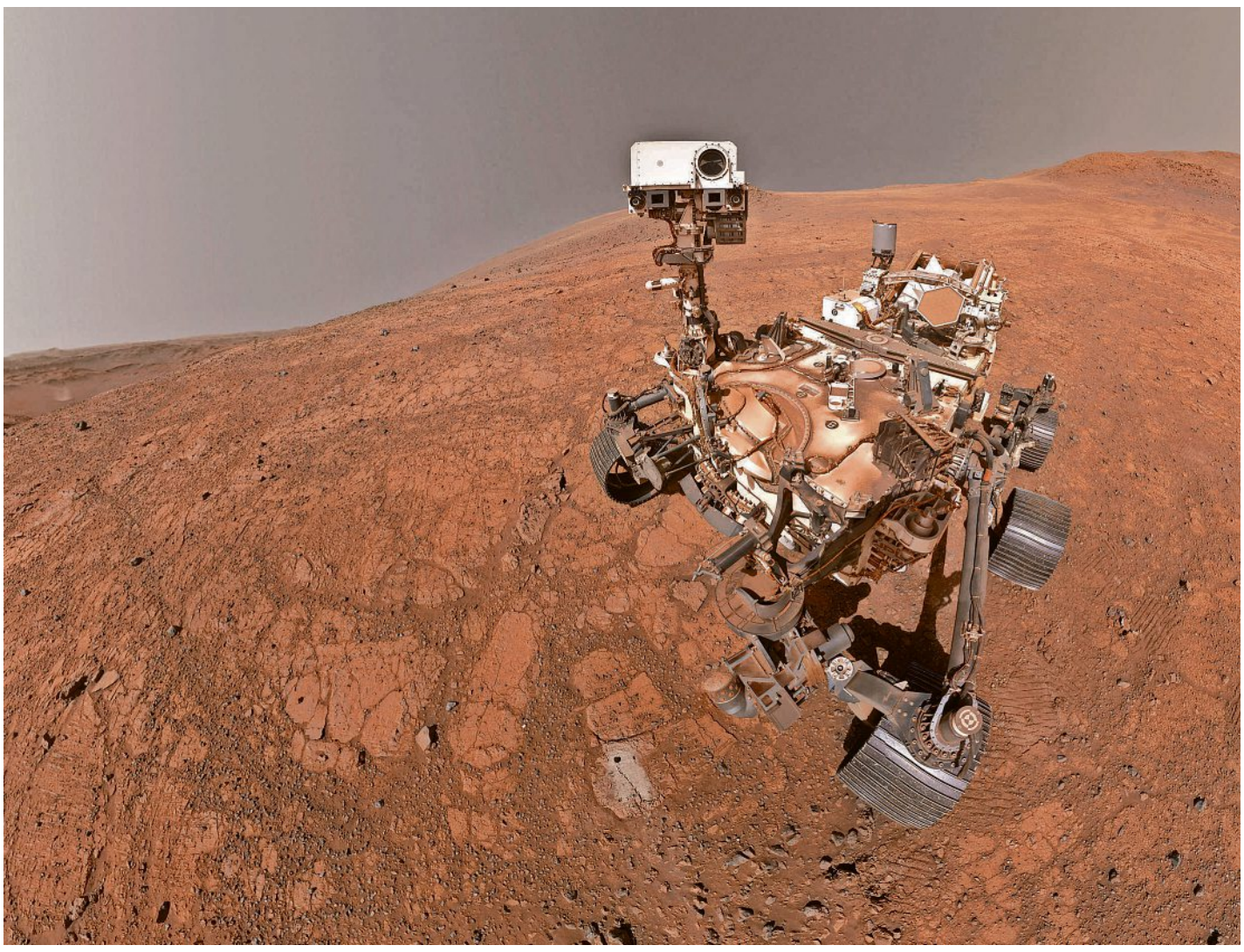

NASA's Perseverance rover has been exploring Jezero Crater on Mars since 2021. PROVIDED BY NASA/JPL-CALTECH/MSSS VIA REUTERS

Rover takes closer look at organic carbon on Mars

Scientists study structure found in two mudstones

Will Dunham
REUTERS

WASHINGTON – Using NASA's Perseverance rover, scientists are getting a greater understanding of the nature of some of the organic carbon – the molecular backbone for all known living organisms – detected on Mars as they explore the question of whether Earth's planetary neighbor ever harbored life.

New research describes the structure of the organic carbon found last year by the rover in sedimentary rock that contained a potential biosignature – a possible sign of past microbial life. This mudstone formed perhaps between 3.2 billion and 3.8 billion years ago beneath a now-vanished body of water in Jezero Crater in the Martian northern hemisphere.

Organic carbon can be a clue as to whether Mars ever harbored life because it serves as the chemical underpinning for the molecules that build DNA, cells and proteins. But its presence is not proof of life because it also can arise in nonbiological processes such as chemical interaction between rock and water.

The detection of organic carbon in two rocks in Jezero Crater – given the names Cheyava Falls and Walhalla Glades – was disclosed last year when the researchers announced the discovery of a potential biosignature in one of them.

The two rocks were sampled by the rover at locations about 330 feet apart, according to planetary scientist Ashley Murphy of the Planetary Science Institute in Arizona, coleader of the new research published in the journal Science Advances.

Following last year's discovery, NASA released an image of the Cheyava Falls rock showing a very fine-grained and rusty-red-colored mudstone bearing ring-shaped features resembling leopard spots as well as dark marks resembling poppy seeds.

Such features on Earth can be associated with microbial activity. A potential biosignature is defined as a substance or structure that may have a biological origin but needs more data or further study before a conclusion can be made about the absence or presence of life.

Using Perseverance's SHERLOC instrument, the researchers in the new study took a closer look at the complex carbon, called macromolecular carbon, present in the two rocks. They said this carbon bears similarities to carbon formed either through biotic or abiotic processes on Earth and to carbon formed through abiotic processes found in meteorites.

This marks the first instance of macromolecular carbon being discovered in mudstones in Jezero Crater, where Perseverance landed in 2021. NASA's other rover operating on Mars, called Curiosity, previously found macromolecular carbon at another site called Gale Crater, located about 2,300 miles away.

"These findings indicate that the habitability of Mars and the availability of organic materials may have been widespread across the planet billions of years ago," said planetary scientist Kyle Uckert of NASA's Jet Propulsion Laboratory in California and a coleader

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OAKLAND CITY UNIVERSITY

Former employees still have no pay

Laid-off workers have waited two months now

Jon Webb
Evansville Courier & Press
USA TODAY NETWORK

After spending the latter half of June promising money for missing paychecks was imminent – and even assigning specific dates for its arrival – Oakland City University still hasn't compensated laid-off employees who have now gone two months without pay.

In a series of emails obtained by the Courier & Press, President Ron Dempsey

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Enjoy area events this weekend

Sarah Loesch
Evansville Courier & Press
USA TODAY NETWORK

EVANSVILLE — Looking for something to do in the Evansville area this weekend? Check out our list of local events and activities.

Concerts on the Lawn

July 10, 6 to 7 p.m. East Library. Free.

East Library will host the next EVPL Concerts on the Lawn performances. Soul N the Pocket will perform.

Dog Days of Summer

July 10, 3 to 6 p.m., Dunigan Family YMCA at 6846 Oak Grove Road. Free.

Dunigan Family YMCA will host Dog Days of Summer Friday. There will be adoptable pets to meet from It Takes a Village No-Kill Rescue and PAAWS, along with lawn games and activities. There will also be local food trucks set up and free water available.

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