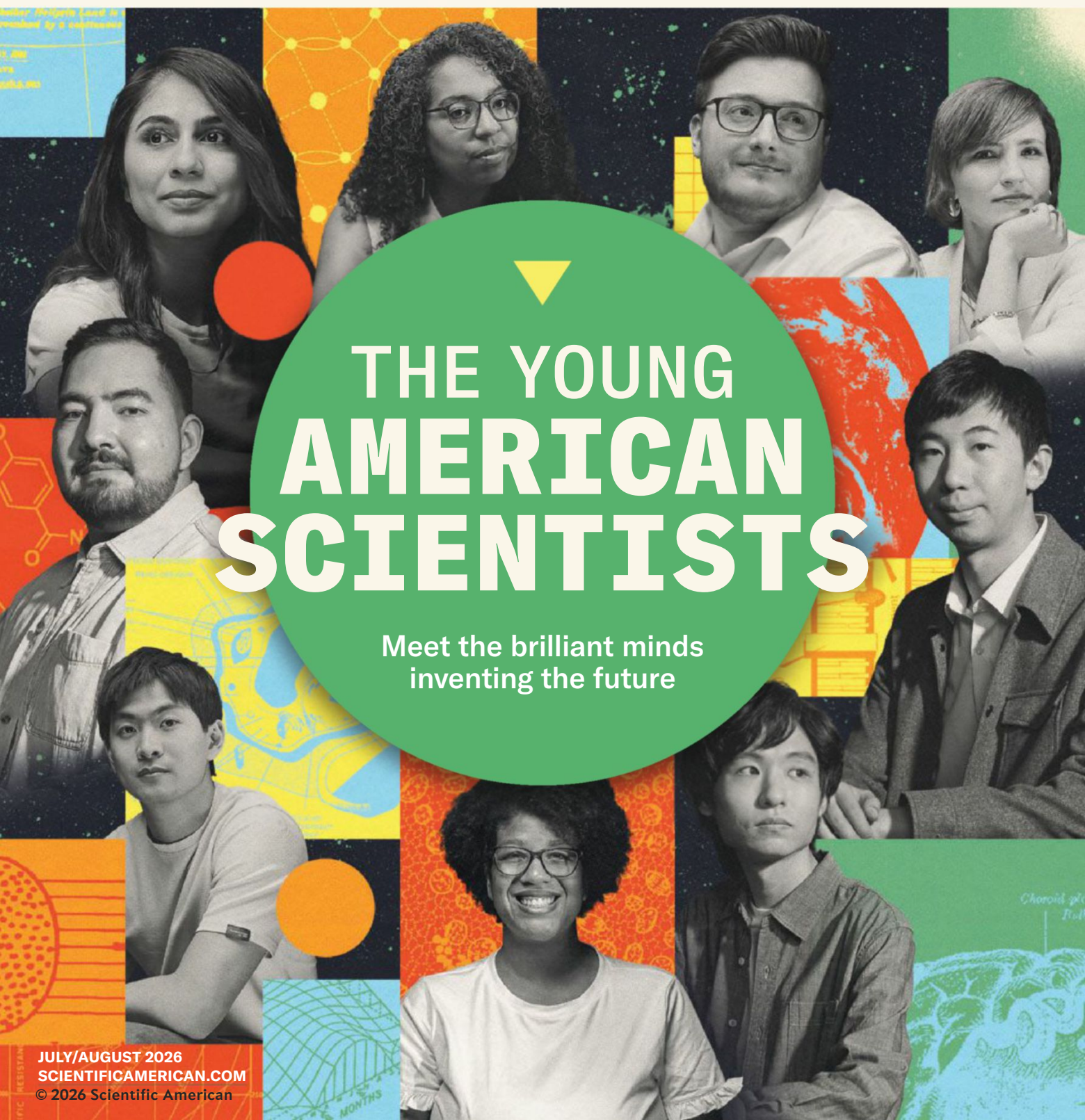


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Craig Venter's
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SCIENCE IN IMAGES

Martian Shadow

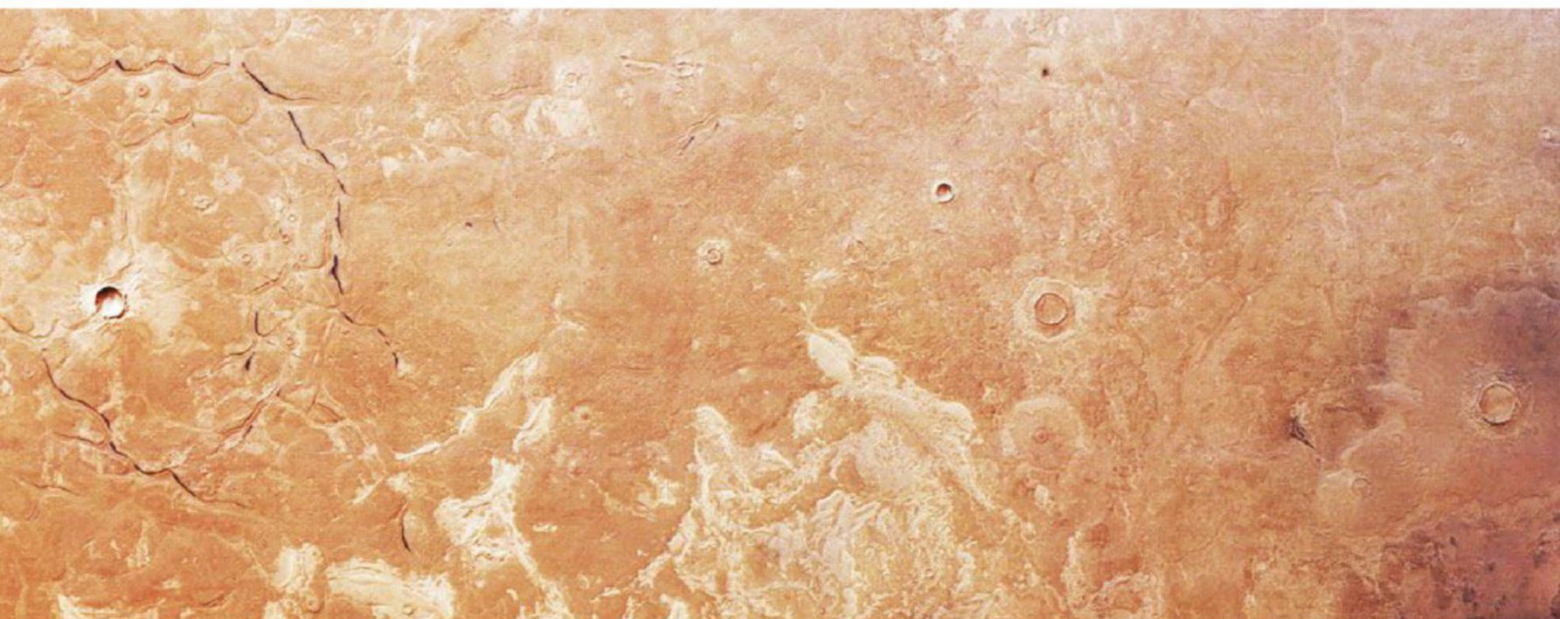
A fast-moving wave of darkness is spreading across the Red Planet

VOLCANIC ASH IS CREEPING across the surface of Mars with startling speed.

The European Space Agency's Mars Express mission has released a stunning orbital image (*below*) showing surprising changes in Mars's Utopia Planitia basin, which is thought to be the site of a now vanished sea. Captured by Mars Express's High Resolution Stereo Camera, the image shows

two abutting landscapes of light and darkness, the former made from Mars's modern-day rusted sands and the latter colored by volcanic minerals from the planet's deep past.

A side-by-side comparison with views of the same patch recorded by NASA's Viking orbiters in 1976 reveals a striking spread of that dark coloration. Visible changes to the Martian



ANIMAL COGNITION

Feline Assistance

Cats, unlike dogs and toddlers, help you only when it helps them

POP CULTURE HOLDS that if you're trapped in a well, Lassie will lead the way to a rescue—but if you're stuck with Garfield, you'd better have some lasagna in your pocket. And research suggests such stereotypes aren't far off.

Scientists compared 19 children between 16 and 24 months old with 38 untrained pet dogs and 22 cats, asking a simple question: Who will spontaneously respond when a human appears to need help? In the experiment, a familiar caregiver—the child's parent or the pet's owner—interacted with a sponge before turning away. Then an experimenter hid it in full view of the study subject. Across three trials of decreasing difficulty—when the sponge was unreachable and covered,

then visible but out of reach, then fully reachable—the person searched, repeating, “I can't find it. What should I do?” but never directly addressing the subject.

The study grew out of a broader question about prosocial behavior—why some species help others and some don't, says comparative ethologist and study co-author Melitta Csepregi, who studies animal behavior at ELTE Eötvös Loránd University in Hungary. “To get at that, we compared dogs, cats and toddlers, three species that live closely with humans but differ sharply in their evolutionary histories.”

In the findings described in *Animal Behaviour*, all three groups paid similar levels of attention. But children and dogs were more likely to show helping-related behaviors—approaching, indicating or retrieving the object for the person. By the final trial, more than half the dogs and nearly half the toddlers indicated the object's location, and some also brought it to the caregiver. Cats never approached it and only rarely indicated its location.

University of Vienna cognitive biologist Ludwig Huber, who

surface are more often marked by millions of years, not by dozens of them, but this isn't the first time observers have witnessed strange waves of darkness spreading on Mars.

According to planetary scientists, the world's strong winds might explain the current spread. Either by blowing around surface deposits of volcanic ash from ancient eruptions or

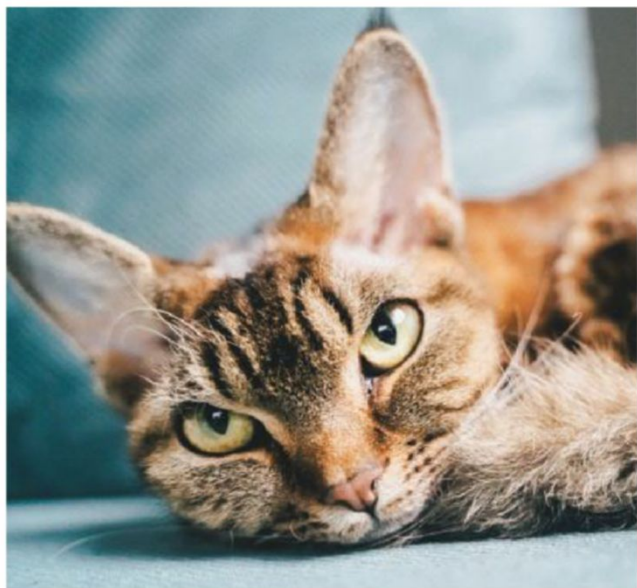
by sweeping away overlying sediments to reveal otherwise hidden igneous rock, the winds have managed to blur the boundary between yin and yang since the last shot was taken.

The new picture also captures shadowy fractures and pits that hint at large volumes of water ice still buried underneath the planet's surface, as well as numerous impact craters sur-

rounded by the detritus of their own explosive formation.

The Mars Express orbiter launched in 2003 and still provides fresh views of Earth's neighbor more than 20 years later, with each new image representing another clue in the enduring mystery of the Red Planet's long-lost, more Earth-like past.

—Joseph Howlett



Yana Iskayeva/Getty Images

was not involved in the study, says that “the authors made considerable efforts to rule out alternative explanations [for dogs’ motivation] such as attention, eye contact, object interest, and getting used to the situation.” It seemed they were trying to help.

But one question remained: Were cats failing to assist because they didn’t understand the situation—or because they lacked motivation?

To test this, the researchers added a final trial, replacing the sponge with food or a favorite toy. Cats then approached and indicated the object as often as dogs and children did.

“This brilliant study puts hard data to showing that cats aren’t mean but operate on a different evolutionary system,” says University of Pisa ethologist Elisabetta Palagi, who was not part of the study. Dogs and toddlers, she notes, are evolutionarily hardwired to treat another’s problem as their own. Cats, however, remain autonomous, understanding the situation without feeling compelled to intervene unless there’s a direct benefit for themselves. “They truly are the efficient specialists of the animal kingdom.” —Anirban Mukhopadhyay