

RESEARCH NOTE**● Europa: Life on a Moon?**

Smooth and brownish white, one of Jupiter's moons, Europa, has fascinated scientists and science-fiction writers for decades. More recently, scientists were excited by tantalizing images from the Galileo Europa Mission. Could it be that life is lurking (or sloshing) beneath Europa's surface?

An Active History

Slightly smaller than Earth's moon, Europa is the fourth largest of Jupiter's moons. It is unusual among other bodies in the solar system because of its extraordinarily smooth surface. The ridges and brownish channels that crisscross Europa's smooth surface may tell a unique story—the surface appears to be a slushy combination of ice and water. Some scientists think that the icy ridges and channels are ice floes left over from ancient volcanoes that erupted water! The water flowed over Europa's surface and froze, like lava flows and cools on Earth's surface.

A Slushy Situation

Scientists speculate that Europa's surface consists of thin tectonic plates of ice floating on a layer of slush or water. These plates, which would look like icy rafts floating in an ocean of slush, have been compared to giant glaciers floating in polar regions on Earth.

Where plates push together, the material of the plates may crumple, forming an icy ridge. Where plates pull apart, warmer liquid mixed with darker silicates may erupt toward the surface and freeze, forming the brownish icy channels that create Europa's cracked cue-ball appearance.

Life on Europa?

These discoveries have led scientists to consider an exciting possibility: Does Europa have an environment that could support primitive life-forms? In general, at least three things are necessary for life as we know it to develop—water, organic compounds (substances that contain carbon), and heat. Europa has water, and organic compounds are fairly common in the solar system. But does it have enough heat? Europa's slushy nature suggests a warm interior. One theory is that the warmth is the result of Jupiter's strong gravitational pull on Europa. Another theory is that warmth is brought to Europa's surface by convection heating.

So does Europa truly satisfy the three requirements for life? The answer is still unknown, but the sloshing beneath Europa's surface has sure heightened some scientists' curiosity!

If You Were in Charge . . .

If you were in charge of NASA's space-exploration program, would you send a spacecraft to look for life on Europa? (Remember that this would cost millions of dollars and would mean sacrificing other important projects!) Explain your answer.