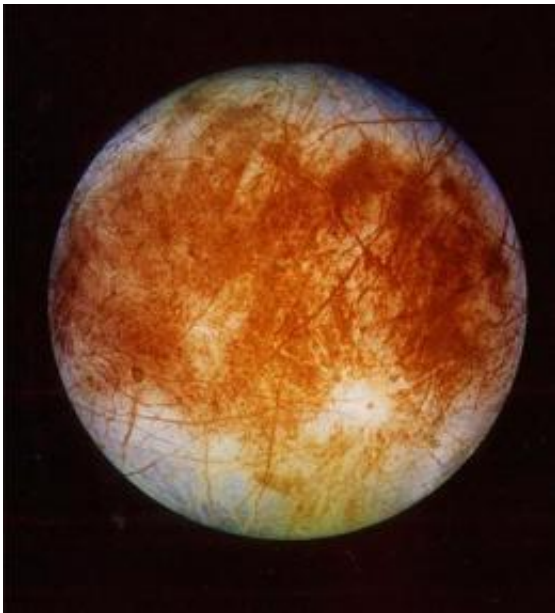


Evidence for ET is mounting daily, but not prove

December 8 2010, By SETH BORENSTEIN , AP Science Writer



This image, released Nov. 12, 1996, by the Jet Propulsion Laboratory in Pasadena, Calif., shows Jupiter's ice-covered moon, Europa. Every new discovery makes it seem more likely that we are not alone. The case for some kind alien life somewhere else in the universe is steadily building. In the past few days, scientists have revealed there are three times as many stars as they previously thought and that a bacteria can live on arsenic, expanding our understanding of how life can thrive under the harshest and strangest environments. Those came on the heels of the first discovery of a potentially habitable planet. (AP Photo/Jet Propulsion Lab)

(AP) -- Lately, a handful of new discoveries make it seem more likely

that we are not alone - that there is life somewhere else in the universe.

In the past several days, scientists have reported there are three times as many stars as they previously thought. Another group of researchers discovered a microbe can live on arsenic, expanding our understanding of how life can thrive under the harshest environments. And earlier this year, astronomers for the first time said they'd found a potentially habitable planet.

"The evidence is just getting stronger and stronger," said Carl Pilcher, director of NASA's Astrobiology Institute, which studies the origins, evolution and possibilities of life in the universe. "I think anybody looking at this evidence is going to say, 'There's got to be life out there.'"

A caveat: Since much of this research is new, scientists are still debating how solid the conclusions are. Some scientists this week have publicly criticized how NASA's arsenic-using microbe study was conducted, questioning its validity.

Another reason not to get too excited is that the search for life starts small - microscopically small - and then looks to evolution for more. The first signs of life elsewhere are more likely to be closer to slime mold than to ET. It can evolve from there.

Scientists have an equation that calculates the odds of civilized life on another planet. But much of it includes factors that are pure guesswork on less-than-astronomical factors, such as the likelihood of the evolution of intelligence and how long civilizations last. Stripped to its simplistic core - with the requirement for intelligence and civilization removed - the calculations hinge on two basic factors: How many places out there can support life? And how hard is it for life to take root?

What last week's findings did was both increase the number of potential

homes for life and broaden the definition of what life is. That means the probability for alien life is higher than ever before, agree 10 scientists interviewed by The Associated Press.

Seth Shostak, senior astronomer at the SETI Institute in California, ticks off the astronomical findings about planet abundance and Earthbound discoveries about life's hardiness. "All of these have gone in the direction of encouraging life out there and they didn't have to."

Two new studies published online Wednesday in the journal Nature add to the interest in weird planets outside our solar system, though they don't exactly make a stronger case for life. One study found a super-hot planet much bigger than Jupiter that seems to be full of carbon in its atmosphere. In the other study, astronomers found a star with at least four large young planets, challenging past assumptions that there's a limit to how many huge planets a star system could have.

Scientists who looked for life were once dismissed as working on the fringes of science. Now, Shostak said, it's the other way around. He said that given the mounting evidence, to believe now that Earth is the only place harboring life is essentially like believing in miracles. "And astronomers tend not to believe in miracles."

Astronomers, however, do believe in proof. They don't have proof of life yet. There's no green alien or even a bacterium that scientists can point to and say it's alive and alien. Even that arsenic-munching microbe discovered in Mono Lake in California isn't truly alien. It was manipulated in the lab.

But, says NASA astrobiologist Chris McKay, who has worked on searches for life on Mars and extreme places on Earth, "There are real things we can point to and show that being optimistic about life elsewhere is not silly."

First, there's the basic question of where such life might exist. Until a few years ago, astronomers thought life was only likely to be found on or around planets circling stars like our sun. So that's where the search of life focused - on stars like ours.

That left out the universe's most common stars: red dwarfs, which are smaller than our sun and dimmer. Up to 90 percent of the stars in the universe are red dwarf stars. And astronomers assumed planets circling them would be devoid of life.

But three years ago, NASA got the top experts in the field together. They crunched numbers and realized that life could exist on planets orbiting red dwarfs. The planets would have to be closer to their star and wouldn't rotate as quickly as Earth. The scientists considered habitability and found conditions near these small stars wouldn't be similar to Earth but would still be acceptable for life.

That didn't just open up billions of new worlds, but many, many times that.

Last week, a Yale University astronomer said he estimates there are 300 sextillion stars - triple the previous number. Lisa Kaltenegger of Harvard University says scientists now believe that as many as half the stars in our galaxy have planets that are two to 10 times the size of Earth - "super Earths" which might sustain life.

Then the question is how many of those are in the so-called Goldilocks zone - not too hot, not too cold. The discovery of such a planet was announced in April, although some scientists are challenging that.

The other half of the equation is: How likely is life? Over the past decade and a half, scientists have found Earth life growing in acid, in Antarctica and other extreme environments. But nothing topped last

week's news of a lake bacterium that scientists could train to thrive on arsenic instead of phosphorous. Six major elements have long been considered essential for life - carbon, hydrogen, nitrogen, oxygen, phosphorus and sulfur. This changed that definition of life.

By making life more likely in extreme places, it increases the number of planets that are potential homes for life, said Kaltenegger, who also works at the Max Planck Institute in Germany.

Donald Brownlee, an astronomer at the University of Washington, is less optimistic because he believes what's likely to be out there is not going to be easy to find - or that meaningful. If it's out there, he said, it's likely microbes that can't be seen easily from great distances. Also, the different geologic and atmospheric forces on planets may keep life from evolving into something complex or intelligent, he said.

If life is going to be found, Mars is the most likely candidate. And any life is probably underground where there is water, astronomers say. Other possibilities include Jupiter's moon Europa and Saturn's moons Enceladus and Titan.

There's also a chance that a telescope could spot a planet with an atmosphere that suggests photosynthesis is occurring, Kaltenegger said. And then there's the possibility of finding alien life on Earth, perhaps in a meteorite, or something with an entirely different set of DNA.

And finally, advanced aliens could find us or we could hear their radio transmissions, McKay said. That's what the SETI Institute is about, listening for intelligent life.

That's where Shostak puts his money behind his optimism. At his public lectures, Shostak bets a cup of coffee for everyone in the audience that scientists will find proof of alien life by about 2026. The odds, he

figures, have never been more in his favor.

More information:

NASA Astrobiology Institute: <http://astrobiology.nasa.gov/>

SETI Institute: <http://www.seti.org/>

Nature: <http://www.nature.com/nature>

©2010 The Associated Press. All rights reserved. This material may not be published, broadcast, rewritten or redistributed.

Citation: Evidence for ET is mounting daily, but not prove (2010, December 8) retrieved 24 April 2024 from <https://phys.org/news/2010-12-evidence-mounting-daily-proven.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--