The case for alien life

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Professors Ariel Anbar and Steven Desch are quoted in a Popular Mechanics article about the search for life beyond Earth.

Only one planet has been proven to support life: Earth. But evidence is mounting that we are not alone. Biogeochemist Ariel Anbar and astrophysicist Steven Desch, professors in ASU's School of Earth and Space Exploration, are quoted in the story "The Case for Alien Life" in *Popular Mechanics*' July/August 2013 issue about the search for life beyond Earth.

Generations of scientists and science-fiction fans have thought we would

find life strewn throughout the stars. But for decades the evidence was thin. Now, thanks to sophisticated probes, space telescopes and rovers, the data is on the side of the believers.

Astrobiologists say that the watery worlds in stars' habitable zones, where life is most likely to be found, are still the likeliest places to search for life.

New studies show that organisms may thrive far beyond the boundary of a star's habitable zone in more extreme environments, including desert worlds and hurtling asteroids. In our own solar system, Jupiter and Saturn are outside of the sun's habitable zone, according to the standard definition, yet several of their moons are considered among the most promising sites to search.

Desch is quoted in the article as saying, "If life might exist in the subsurface oceans of moons, heated by their own radioactivity, then no distance from the sun is too far. It's beginning to look like the definition of a habitable zone is out the window."

Anbar points out that distant star systems will have varying proportions of elements such as carbon, oxygen and silicon. Such variety could drive evolution in hard-to-imagine directions. "The things we can conceive of are probably a very small set of the possibilities that are out there," Anbar says. "We know we're going to be surprised."

However, there is no guarantee we'll ever find life on distant worlds.

"Is life a universal phenomenon, a planetary process just like plate tectonics?" Anbar asks. "Or is life some weird statistical fluke? The only way we can answer that is by searching."

Provided by Arizona State University