

# Research Assessment #6

**Date:** November 4, 2016

**Subject:** Astrobiology: *Proxima b*

**Source:**

1.) JPL. "Study: Planet Orbiting Nearest Star Could Be Habitable." NASA. NASA, 25 Oct. 2016. Web. 04 Nov. 2016.

2.) @Mad\_Science\_Guy. "Is the Nearest Alien Planet Proxima B Habitable? 'It's Complicated'" Space.com. Jesse Emspak, 31 Aug. 2016. Web. 04 Nov. 2016.

**Analysis:**

Earth...a place that we all call home, a planet that we associate with life, a creation that we deem unique to the universe. However, this may not be true anymore. Our blue planet might not be unique and it might not be the only planet that fosters life. This idea might seem preposterous to many but in the scientific community it is looked as something that is very much plausible. With that said, astrobiologists around the world have made the fascinating discovery of Proxima b, an exoplanet that reminds us all of our own home, Earth.

With that said, why is Proxima b a sudden interest in the study of exoplanets? What characteristics make it possible for this planet to be habitable? For starters, Proxima b is thought to be in the habitable zone of its star. However, scientists have found that this planet orbits its star very close, which poses as an obstacle for the

creation of life. Despite this problem, scientists have also found that the planet's star is a red dwarf. This means that it has only 0.1% of the brightness that our sun has. In addition to that, the red dwarf star's mass is only 12% of the sun. When we look at these numbers, we can conclude that the habitable zone for this planet is 25 times closer than our Earth's. Fortunately, that is where we think Proxima b is. On top of this, the red dwarf star has a longer lifespan than a regular star, which means there is more time for life to form and evolve on Proxima b. Apart from these information that scientists from the Marseille Astrophysics Laboratory have obtained, they are still trying very hard to find the radius of Proxima b. By finding the radius of this planet, we can figure out the chemical profile of the planet, see if it has water, and if it has a sufficient atmosphere. Scientists have already calculated different scenarios for the planet. Once scenario shows that if the radius of the planet is 5,543 miles then there would be a high possibility for it to be habitable for life. To be more specific, with this radius, we will know that Proxima b is 50% rock and 50% water. It was also concluded that there will be a single 124 mile ocean and a thin atmosphere for this situation. This conclusion that scientists provided gives a lot of hope for the future of Proxima b.

We have all this information of this exoplanet but how is this useful for us? Is it really worth investing a lot of money and time into this? As humans, we have this drive to further explore the planet and our universe. As we discover new things, we learn more about ourselves and also our surroundings. But, how does this affect us? By learning about other planets, we understand Earth better. For example, we understand the aspects of water that make it the building block of life. Our expansion of knowledge is not the only reason why the research on Proxima b is important. We all

know that our sun will one day expand into a red giant and end life on Earth, as we know it. You might think, well humans won't make it that far but what if we do? What will we do then? That is when the habitability of exoplanets comes in handy. Another reason is the fact that our population is growing at such a rapid rate. At one point, we will reach our carrying capacity and the our planet will not be able to sustain all of us. If we want to to survive as a species, we need to find an alternate home.

We have just begun our journey to find life in our universe. The idea of us not being alone is something to really think about. With the 3,532 exoplanets we have found, there is a high possibility that we might just come across another planet like Proxima b. In conclusion, the search for life outside our solar system is on the rise and the future of humans resides in how successful we are with science.