Life On Other Planets Essay, Research Paper

Life On Other Planets

Life exists on other planets. Out of the billions of solar systems, there has to be a chance that a least a couple planets have the ability to support life. Life may have developed on the planets like life developed here, but it may have developed differently also. Are they more intelligent than we are or are they single-celled organisms? Do they have broadcast capabilities, so they can contact us?

“It goes back to how life on Earth started. In the early days of Earth, the atmosphere was just carbon monoxide, but algae developed into plants which produced oxygen” (Rather and Bowen 2). That brings us to the question of how the algae got here. The answer to that question may lay right beneath us, at the bottom of the earth. There are scientists in Antarctica digging in the snow hoping to find some answers.

Some of earth’s fossil records indicate that within a billion year period of it’s formation as a planet, as soon as heavy bombardment by asteroids ceased, primitive organisms such as bacteria and algae evolved and spread around the globe very quickly. Those organisms illustrated the totality of life here for the next two billion years or so. Therefore, if life exists on other planets, it might well be in this highly uncommunicative form. Consequently it might be a while until it would finally evolve into a slightly intelligent form of life. As algae became more extensive, they began adding large amounts of oxygen to Earth’s atmosphere. The manufacturing of oxygen, fed by energy derived from sunlight, is fundamental to carbon-based life. Oxygen is a chemically reactive gas; without continued replenishment by algae and, later in Earth’s evolution, by plants, its concentration would fall. Consequently, the presence of large amounts of oxygen in a planet’s atmosphere is a good indicator that some form of carbon-based life may exist there.

But there is still a problem as to how the initial jump from non-alive to alive came about. We know a lot of details, and have a pretty good idea of how life got from algae to cat to man, but how we ended up with algae is the big question here. This mystery makes it hard for us to figure out how life would arise on other planets. “Life is not all that mysterious, it is a property of a collection of extremely complex molecules” (Britt 1).

In order to help people figure out what planets out there could support life and may have life on them, we have to look at what life needs to survive. If other planets had carbon-based life they would likely have the same or close to the same chemistry that earth has. Water is an excellent solvent for life’s biological reactions and serves as a source of needed hydrogen. Carbon is a particularly suitable building block of life. Carbon is abundant ‘in this universe, and no other known element can form the myriad of complex but stable molecules necessary for life as we know it. It is believed that if a planet looks like Earth and has liquid water and oxygen, then this would present strong evidence for its having life. There could be some other non-biological source on a lifeless planet. Life could also develop from some other type of chemistry that does not generate oxygen. We should still be able to detect all stirring from chemical residues.

There is a theory that maybe life came from outer space, or the comets and meteorites in it. “Like giant interstellar sperm, comets might transport the seeds of life from collapsed space clouds to fledgling and otherwise barren planets, depositing their life-giving substances in a colossal impact” (Britt 1). A new computer shows that at least one building block of DNA could develop in space when giant clouds of molecular matter collapse under their own gravity, squeezing and forcing chemical reactions. “If the controversial theory gains support, it would be a shot in the arm for an idea more than 20 years old: that life on Earth originated in space” (Britt 1). This theory could explain how life got started on our planet so soon after this planet was formed. It definitely proposes that life is not as rare or as tough to jump-start as we might think. This confirms the idea that life isn’t all that rare.

The list of planets beyond our solar system is growing by leaps and bounds, and scientists are developing new methods to expand their reach toward these other worlds. The tally of extra solar planets has raised to more than 50. “All of these planets were detected indirectly, in most cases using a “radial velocity” technique that analyzes subtle variations in the light coming from distant stars” (Boyle 1). Planet-hunters say such differences are generated as they orbit the stars. “The most notable detection relates to a planet circling the star Epsilon Eridani, just 10.5 light years or about 63 trillion miles away” (Boyle 1). That would make it the closest world ever found beyond our solar system. “Researchers analyzed nearly 20 years’ worth of observations from four different telescopes to conclude that the faint variations in Epsilon Eridani’s spectrum were caused by a circling planet” (Boyle 1).

Some scientists have been looking at dust trails around stars and have concluded that dust trails bare the signatures of unseen planets. But all of the planets found in this manner are thought to have orbits much wider than Pluto’s track around our sun, meaning that they will most likely not be inhabitable by life. “We’re now at a stage where we are finding planets faster than we can investigate them and write up the results” (Boyle 4). All of these results hint that our celestial neighborhood could be a fertile field for planets like Earth. None of the methods used so far are fine enough to detect Earth-like planets directly. “However, in the next 10 years, scientists hope to develop space-based instruments capable of spotting such worlds around relatively nearby stars” (Boyle 4). Possibly even analyze their atmospheres for signs of life. In order to find some of these planets people need to have a lot more powerful telescopes than they now have. “To detect them we would have to have a telescope 100 meters in diameter in space but we cannot launch something like that” (Dalton and Lambie 2).

Many scientists believe that planets similar in size, distance from the sun, and have oceans of water like Earth are likely to sustain life. If each star has planets spanning a range of orbital distances, as occurs in our solar system, then one of those planets is likely to orbit at the right distance to sustain liquid water, even if the star shines more or less brightly than the sun. Temperature means little if a planet’s gravitational pull cannot hold on to oceans and an atmosphere. “If distance from a star were the only factor to consider, Earth’s moon would have liquid water” (Angel and Wolff 3). But gravity depends on the size and density of the body. Because the moon is smaller and less dense than Earth, its gravitational pull is much weaker. Any water or layers of atmosphere that might develop on or around such a body would quickly be lost to space.

Three key compounds that we would expect to find on inhabited planets? ozone, carbon dioxide, and water? leave strong imprints in a planet’s infrared spectrum. To see a planet’s infrared spectrum, the telescope would have to be placed in space. There would be no way that a telescope on Earth would be able to see the planets infrared spectrum.

“Polls show that 54% of Americans are convinced that there are aliens out there, to say nothing of the significant fraction (30%) who suspect we’ve already been visited by them” (Golden 1). If there is other life out there, what are the chances of finding it in our lifetime, or even our children’s lifetime. Conditions have to be just perfect to develop life. Under the right circumstances life can arise pretty easily. That is if it does reach a level advanced enough to broadcast its presence, it won’t destroy itself in a nuclear war or an environmental meltdown before firing off Earth-bound messages. Could this be a prophecy of what will become of this planet? “Hunting for extraterrestrial’s requires a lot of faith” (Golden 1). Even scientists shy of success don’t want to be malcontents. They agree on the importance of continuing the quest, not just for the microbes on Mars or Europa but also for those faint signals from some remote world.

The question still stands. Does life exist on other planets? Are they intelligent or are they microbes? Will we ever really know?