

Does life exist on other planets essay



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Before we start to investigate the possibility of life beyond earth, we must first define life. The oxford English dictionary defines life as- “ the condition that distinguishes animals and plants from inorganic matter, including the capacity for growth and functional activity”. So, life can be seen as a body of mass that has senses, can reproduce and has nucleus or brain. Life can also be seen as a molecule or group of molecules that can reproduce or have a function. Throughout this case study I will refer to life as a cell or group of cells that have a nucleus, this can include a small patch of bacteria ranging up to a large biomass.

Not only do we have to consider how the organism can survive, but we must also consider what environments life can and can't survive in. For example viruses can survive the pressures and the environment of space but humans cannot. Some planets contain an atmosphere with lots of Carbon dioxide in it or lots of Nitrogen in it. Some have an atmospheric temperature that can vary between -70C and 20C.

How can life survive in these temperatures? How can life adapt to something that can vary so much but most importantly, does life exist on other planets I will be investigating this question using resources such as the Internet, books, documentaries and other valid resources available. All of these resources will mention and documented in the bibliography at the end. Scientific studies Scientists have been working on theories and ideas and have studied the existence of life beyond. Scientists decided that if they where to try and find out how life on other planets started, they must first discover how life started on Earth. A theory says that chemicals below the earths crust where combining together due to the extreme heat and

eventually came to the surface to evolve; this is called the primordial soup theory (see picture above). One theory says that it was due to a meteor; some meteors have been found to contain amino acids, these amino acids can group together to form a protein, this is called the panspermia theory, it was widely disregarded at first, as meteors in space would have been constantly bombarded with radiation.

However due to recent findings it is now coming back into popularity among scientists. Scientists are also looking on the one place that no one would have expected for people to look for, Earth. Scientists are collecting minerals that differ from the rest of earths' common natural minerals. They study meteors and other fragments that make it through the atmosphere to compare minerals and atomic numbers.

If this study can go deeper it may just lead us to evidence that will point us to the existence of another planet just like ours, after all, what better way of finding life is there than finding a planet just as good as the one we are on?

Dealing with the environmentThe vacuum of space is a harsh environment to live in; it has temperatures of below 0C and almost always has a presence of gamma radiation or solar wind. However the most likely places for life to exist are on planets and asteroids as they may offer resources and protection. PlanetsPlanets offer a possibility of life; they usually contain an atmosphere and depending on how it was formed, what it was formed from and how close is it to its nearest star, it could provide water, heat, and possible nutrients. A planets chemical make-up is one of the cornerstones in supporting life, for example, photosynthesis-Carbon dioxide + water =

glucose + oxygen
The atmosphere needs to contain carbon dioxide for photosynthesis to take place, as well as many more chemicals.

But there is more to it than the stated formula. Plants need nutrients; some of these nutrients are nitrates, which are made from nitrogen. Nitrogen is an un-reactive gas so nitrates can't be made on its own; instead certain bacteria absorb the nitrogen and have the ability to make it into a nitrate and then deposit it into the ground. So now already, the compulsory elements to sustain life have increased in complexity; the planet needs to have resources that can also sustain the growth of bacteria as well as the growth of a plant, therefore decreasing the chance of possible life.

Asteroids
Asteroids only really offer some protection and maybe some frozen water; they don't have what is needed to sustain an element of life in a large quantity. The only possible thing that could survive on an asteroid is a virus. However viruses are useless on their own; if they don't have a body (or host) to infect it just become a group of molecules that have the potential to reproduce one another but can't. Finding a planet that is suitable for life may be unlikely, however with so many planets out there that chances of finding a planet similar to ours, or a planet with good conditions for sustaining life are very strong and very probable.

It's just the simple challenge of trying to find these planets that is holding us back. We also have not been able to develop the technology to be able to go further into space whilst at the same time being able control the spacecraft and sent back the data. Until this is done we have no way have knowing what truly lies beyond planet Earth. What are we looking for
One of the main

things that life needs to survive is water, it is accepted among scientists that water is what fuels life and evolution.

Water is considered to be important because it is chemically stable at many temperatures and can carry biological or chemical compounds. Another thing that astronomers and astro-biologists look for is the presence of carbon, carbon is an organic compound usually found in organic life forms. Also the atmosphere can tell signs of life on the planet, it would however have to be a life form large in population, whether if it's plants or something bigger. Our atmosphere contains oxygen and methane; these two gases are reactive and will react with each other to form a different compound. But obviously there are still oxygen and methane molecules in our atmosphere, which means there is something to replenish the atmosphere of these molecules, that being trees and animals. So if a planet's atmosphere contains elements that stay consistent even though they are reactive there is a possible chance that it may contain life.

Another way to see if life exists is to monitor space, looking for signals that may have come from more sophisticated life forms. One of the main agendas on SETI (Search for Extraterrestrial Intelligence) program is to try and search the skies for signals, after all, UHF (Ultra High Frequency) waves are always penetrating through the Ionosphere and soaring into space, if us why not any other sophisticated life form. Destination...Mars Mars has always been a suspect for containing or once containing life; many space robots and satellites have been sent to orbit Mars and to collect data.

Out of the 34 missions to Mars 16 have failed, the first ever was in 1971 by the soviet Mars 3 Mission. In 1976 Viking 1 and Viking 2 landed on Mars to collect samples that may contain possible evidence to support the existence of life on that planet. Unfortunately they both came back negative for signs of life, they did however come back with data which after some scientific analysis concluded that mars was once warm and wet, perfect conditions for growing bacteria or larger forms of life. Also in 2003 a more recent launch was organized, this time to see if we could find some subsurface water, if this is so, then scientist might be able to analyse it for microscopic aqua plants or animals or some bacteria. In addition to landing on the surface of Mars and analysing it there, there are many artificial satellites orbiting the planet curiously studying the planet. The Japanese satellite Nozomi was launched in 1998 and has been set co-ordinates to orbit mars and study its upper atmosphere, it has however had a few problems since its launch and might not function correctly.

Conclusion Well for many years humans have pondered whether or not life exists beyond planet Earth. There have been theories about how life first started on earth and how it might lead us to evidence about extraterrestrial life. We have created advanced technology and organisations such as SETI and NASA that specialise in exploring outer space and examining it. With every year that goes by we bring light to another part of the universe that we did not know existed. And for every part we bring light to we get closer to finding evidence of extraterrestrial life. The universe is huge and getting bigger, with novae, supernovae and nebulas always forming new planets and with so many out there, the chance of finding some sort of life is very likely.

With so many stars and so many planets orbiting them finding a planet with similar conditions to ours will be a tough job, however many years ago we thought that the atom was the smallest thing. Man will keep on finding new ways to overcome problems, new ways to explore, and new ways to discover places that would never be possible to without science. Eventually man will create a device that will finally be able to go further than ever before. But until then we must wait for that day to come, or we might not be the ones that will discover extraterrestrial life first, we might just be the ones that will be discovered!