

The Kepler Space Craftin space

The scientific objective of the Kepler Mission is to explore the structure and diversity of the extrasolar planetary systems. This is going to be achieved by surveying a large sample of stars to:

- Determine the frequency of terrestrial and larger planets in or near the habitable zone of a wide variety of spectral types of stars.
- Determine the distributions of sizes and orbital semi-major axes of these planets
- Estimate the frequency of planets and orbital distribution of planets in multiple-stellar systems.
- Determine the distributions of semi-major axis, albedo, size, mass and density of short-period giant planets.
- Identify additional members of each photo-metrically discovered planetary system using complementary techniques.
- Determine the properties of those stars that harbor planetary systems.

Source: http://kepler.nasa.gov

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axy, the stars that are going to be observed by Kepler are roughly the same distance from the galaxy centre as the solar system. This fact is very crucial because it will usher the better understanding on whether the position in the galaxy is related to habitability which is suggested by the Rare Earth Hypothesis, which states that Earth-like life is rare in the Universe while microbial life is common. Here it is important to mention that on August 7 1996, NASA scientists profoundly announced to the world that within a Martian meteorite, they had found evidence of a microscopic life form that may have existed on Mars more than three billion years ago. However in the global astronomical community this claim is still a matter of debate.

Astro-biologically speaking, there are many arguments on what extraterrestrail life would be like. There are some who believe that all life is like life on Earth that is carbon-based lifeforms while there are others who believe silicon and even ammonia-based lifeforms could exist in other planets. There are two accepted hypothesis regarding the origin of extraterrestrial life one of which proposes that it may have emerged independently from different places in the universe while the alternative one, the panspermia hypothesis, says that life emerges from one specific location and then spreads between habitable planets. According to Hubble Space Telescope's observations, there are at least 125 billion galaxies in the universe, at least 10% of all sun-like stars have a system of planets and there are billions of stars with planets orbiting them in the universe. And even a billionth of these stars have planets that support life then there are around 6.25 billion life-supporting solar systems in the universe. So far scientists strongly believe that the following planets have once developed or presently continue to host life and these include Venus, Mars, Mercury, moons of Jupiter and Saturn (e.g. Europa, Enceladus and Titan), Gliese 581 c and d. Kepler's finding will eventually strengthen more of these scientific assumptions.

Somebody once said the story of the universe is the story of each of us and Kepler's active effort to determine if any other planet harbours life, perhaps with civilizations more advanced than ours, will only help us understanding ourselves better. Whatever the findings may be of Kepler it will definitely make way for future journeys that will usher betterment for mankind and aid us in realising how insignificant yet terrifically crucial our existence is in the whole wide universe. Believe or reject, scrutinise or criticise but as the saying goes, there is more than what meets the eye, surely "Truth is out there".