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Did Life Begin In Space? New Evidence From Comets

ScienceDaily (Aug. 14, 2007) — Recent probes inside comets show it is overwhelmingly likely that life began in space, according to a new paper by Cardiff University scientists.

Professor Chandra Wickramasinghe and colleagues at the University's Centre for Astrobiology have long argued the case for panspermia - the theory that life began inside comets and then spread to habitable planets across the galaxy. A recent BBC Horizon documentary traced the development of the theory.

Now the team claims that findings from space probes sent to investigate passing comets reveal how the first organisms could have formed.

The 2005 Deep Impact mission to Comet Tempel 1 discovered a mixture of organic and clay particles inside the comet. One theory for the origins of life proposes that clay particles acted as a catalyst, converting simple organic molecules into more complex structures. The 2004 Stardust Mission to Comet Wild 2 found a range of complex hydrocarbon molecules - potential building blocks for life.

The Cardiff team suggests that radioactive elements can keep water in liquid form in comet interiors for millions of years, making them potentially ideal "incubators" for early life. They also point out that the billions of comets in our solar system and across the galaxy contain far more clay than the early Earth did. The researchers calculate the odds of life starting on Earth rather than inside a comet at one trillion trillion (10 to the power of 24) to one against.

Professor Wickramasinghe said: "The findings of the comet missions, which surprised many, strengthen the argument for panspermia. We now have a mechanism for how it could have happened. All the necessary elements - clay, organic molecules and water - are there. The longer time scale and the greater mass of comets make it overwhelmingly more likely that life began in space than on earth."

The new paper, *The Origin of Life in Comets*, by Professor Wickramasinghe, Professor Bill Napier and Dr Janaki Wickramasinghe is to be published shortly by the International Journal of Astrobiology.



Artist's impression of the Deep Impact comet probe. (Credit: NASA)

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