

Mars rocks could provide vital clue to how life began on Earth

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Studying rocks on Mars, which are among the oldest rocks in the Solar System, could provide scientists with key evidence of how the earliest forms of life arose on Earth, say researchers writing in this month's edition of *Origins of Life and Evolution of Biospheres*.

Life on Earth was preceded by a period of chemical evolution during which inanimate organic matter was assembled into living systems. Unfortunately, no evidence of this period of evolution remains on Earth, as there are no rocks left on the planet old enough to have recorded trace evidence of the chemical events billions of years ago. This is because Earth is a geologically active planet, and any such ancient rocks have been consumed and recycled by the rock cycle.

However, there are still rocks on Mars today which have been there for 4.5 billion years, since both Earth and Mars were formed. Dr Randall Perry from Imperial College London's Department of Earth Science and Engineering suggests that these rocks may have preserved within them evidence of how chemicals evolved during the transition from pre-life to life. If present, this evidence would not only shed vital new light on how life came into existence on Earth, but could also prove that similar simple life forms were arising on Mars at the same time.

Dr Perry explains: "The kind of evidence I think might be found in these ancient Martian rocks would be traces of primordial polymers or some remnants of the failed chemistry of reproduction. It would be fascinating to use rocks from Mars to find out more about the complex and little-understood chemical process whereby matter on Earth evolved into what we would recognise as primitive forms of life.

"What's more, there is always the chance that Martian rocks may reveal more than just traces of ancient chemical changes: the opportunity might arise to find evidence of early forms of life on Mars which took a different evolutionary path to those on Earth."

Citation: Randall S. Perry and William K. Hartman, "Mars primordial crust: Unique sites for investigating proto-biologic properties," *Origin of Life and Evolution of Biospheres*. Published online 28 November 2006.

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