

## Conditions for the emergence of life on the early Earth

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Published August 2006

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Living entities exhibit the three fundamental characteristics of metabolism, growth and reproduction, and are capable of evolutionary adaptation to their environment. Understanding how life, having these characteristics, emerged on Earth within 1 billion years of its formation is both a fascinating scientific problem and a pre-requisite for predicting the presence of life elsewhere in the universe. The origins of the biotic raw materials, the

physical and chemical conditions on the early Earth permitting development - first to primitive life forms and subsequently to more complex forms of life - were all subjects for lively debate at the Discussion meeting from which this publication derives. Recent advances in several areas were reported, including possible new modes of formation of cellular structures, new metabolic and self-assembly processes, and tests of Darwin's conjecture that life might have started in a warm little pond. The publication demonstrates the mutual dependence of the wide range of subjects discussed and, by highlighting unsolved problems, new avenues of research are suggested.

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