Introduction to the Special Issue on Astrobiology on the Moon

I. A. Crawford

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Although the Moon has, almost certainly, never supported any life of its own, lunar exploration will nevertheless reveal much of astrobiological interest. As the Earth's closest celestial neighbour, for the last 4.5 billion years the Moon has been orbiting the only known inhabited planet in the Universe. Its ancient surface therefore retains a unique record of the inner Solar System environment under which life arose and evolved on our planet, and the impact and volatile history of the inner Solar System more generally. The Moon can also provide knowledge essential for the long-term exploration of space, including information on the survival of micro-organisms and humans on hostile planetary surfaces, and the spread of biological contaminants under extreme planetary conditions. Future human exploration of the Moon may additionally provide improved insights into human physiology and medicine with potential benefits here on Earth.

These different aspects of lunar astrobiology were addressed at a Specialist Discussion Meeting of the Royal Astronomical Society, held in London on 14 May 2010. This Special Issue of *Earth Moon and Planets* contains expanded, refereed, versions of the papers presented at that meeting; a shorter, non-technical, summary of the proceedings has been given previously by Crawford and Cockell (2010). Collectively, the papers published in this volume demonstrate that an improved understanding of the origin, evolution, distribution and future of life in the Solar System will be one beneficial consequence of an expanded programme of lunar exploration. Given that these astrobiological benefits are only a sub-set of all scientific reasons for wanting to explore the Moon, which include other areas of planetary science and astronomy not discussed here, the totality of the scientific case for a robust programme of lunar exploration appears to be overwhelming.

Reference

I.A. Crawford, C.S. Cockell, Astrobiology on the Moon. *Astronomy & Geophysics* **51**, 4.11–4.14 (2010)

I. A. Crawford (✉)

Department of Earth and Planetary Sciences, Birkbeck College London, London WC1E 7HX, UK
e-mail: i.crawford@ucl.ac.uk