**Systems of Creation: the Emergence of Life from Non-living Matter**

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The advent of life from prebiotic origins remains a deep and possibly inexplicable scientific mystery. Nevertheless, the logic of living cells offers potential insights into an unknown world of autonomous minimal life forms (protocells). This talk highlights the key life criteria required for the development of protobiological systems, and discusses how ideas about origins could lead to novel advances in the design and construction of synthetic protocells. In particular, I will review some recent experiments undertaken in my laboratory that provide steps towards synthetic representations of primitive cellularity using bioinspired chemistry principles and techniques. I will discuss four new protocell models [1-4], and use these experimental systems to discuss pathways towards chemical cognition and collective behaviour in compartmentalized chemical micro-ensembles, and to address new ideas related to prebiotic organization and the origin of life [5-8].

**References:**

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