From the **origin of life to cognition**

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**Abstract**

The main statement of contemporary science about the origin of life on Earth, is that life originated from the inanimate matter via a long series of spontaneous steps of increasing molecular complexity, till the formation of the first cells (at which point Darwinian evolution sets in). The major biological and epistemological concepts characterizing the living cell will be discussed in the lecture at the light of the theory of autopoiesis developed by Maturana and Varela-starting from the critical question: what is life? And also the other main question of the autopoiesis theory “what is cognition?” will be discussed. In this scenario, also some philosophical questions will be tackled, for example whether and to what extent the origin of life on Earth is an obligatory pathway (absolute determinism), or whether it is mostly the product of contingency (once upon a time called “chance”). This will be discussed, together with research projects in the field of synthetic biology that tackle the question of determinism versus contingency (the “never born proteins” and the “minimal cell” project). This will give the opportunity of discussing quite in general the limits and perspective of the new field of synthetic biology, aimed at the laboratory construction of novel life forms, or biological structures alternative to the extant one.