

# ***Evolution in Digital Organisms - Life NOT As We Know It***

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## **Abstract**

The object of Experimental Evolution is to test evolutionary theory and hypotheses by studying the response of adapting populations to strictly controlled environments. Depending on the organism used, experiments are limited by several issues: the extent to which the environment can be controlled or altered, the difficulty of recording the data, and the generational time of the organism.

Digital organisms represent a new form of life that does not share any ancestry with organic terrestrial life. They live in the memory area of a standard computer that has been specially prepared by running the "Avida" software. These "digitals" can be used for a new type of research we call "comparative evolutionary biology", which attempts to identify universal features of evolving and adapting populations. They are the type of features we expect are exhibited by any form of life, here or elsewhere in the universe. Adami will highlight two applications of digital organisms: discovering new effects in evolution, and testing protocols for extra-terrestrial life detection. This lecture is sponsored by the Exploration Systems Autonomy Section. Tuesday, August 27, 12:00 noon to 1:00 p.m., 167 Conf. Rm.