What is Artificial Life?

"The study of man–made systems that exhibit behaviors characteristic of natural living systems."

C. G. Langton. "Artificial Life." In C. G. Langton, editor. *Artificial Life*, Volume VI of *SFI Studies in the Sciences of Complexity*, pages 1-47, Addison-Wesley, Redwood City, CA, 1989.

"Artificial Life is a field of study devoted to understanding life by attempting to abstract the fundamental dynamical principles underlying biological phenomena, and recreating these dynamics in other physical media - such as computers - making them accessible to new kinds of experimental manipulation and testing. ...
In addition to providing new ways to study the biological phenomena associated with life here on Earth, *life-as-we-know-it*, Artificial Life allows us to extend our studies to the larger domain of "bio-logic" of possible life, *life-as-it-could-be* ..."

C. G. Langton. "Preface." In C. G. Langton, C. Taylor, J. D. Farmer, and S. Rasmussen, editors, *Artificial Life II*, Volume X of *SFI Studies in the Sciences of Complexity*, pages xiii-xviii, Addison-Wesley, Redwood City, CA, 1992.

"Among all of the things that artificial life is or will come to be, however, it is probably safe to say that the field as a whole represents an attempt to vastly increase the role of synthesis in the study of biological phenomena."

C. G. Langton. "Editor's introduction." *Artificial Life Journal*, Volume 1, Number 1/2, pages v-viii, 1994. The MIT Press, Cambridge, MA.

"Artificial Life (AL) is the enterprise of understanding biology by constructing biological phenomena out of artificial components, rather than breaking natural life forms down into their component parts. It is the synthetic rather than the reductionist approach."

T. S. Ray. "An evolutionary approach to synthetic biology: Zen and the art of creating life." *Artificial Life Journal*, Volume 1, Number 1/2, pages 179-209, 1994. The MIT Press, Cambridge, MA.

"... Artificial Life models ... are powerful enough to capture much of the complexity of living systems, yet in a form that is more easily manipulable, repeatable, and subject to precisely controlled experiment than are the corresponding natural systems."

C. Taylor and D. Jefferson. "Artificial life as a tool for biological inquiry." *Artificial Life Journal*, Volume 1, Number 1/2, pages 1-13, 1994. The MIT Press, Cambridge, MA.

"Alife is a constructive endeavor: Some researchers aim at evolving patterns in a computer; some seek to elicit social behaviors in real-world robots; others wish to study life-related phenomena in a more controllable setting, while still others are interested in the synthesis of novel lifelike systems in chemical, electronic, mechanical, and other artificial media. Alife is an experimental discipline, fundamentally consisting of the observation of run-time behaviors, those complex interactions generated when populations of man-made, artificial creatures are immersed in real or simulated environments. Published work in the field usually relates the conception of a model, its instantiation into real-world or simulated objects, and the observed behavior of these objects in a collection of experiments."

E. M. A. Ronald, M. Sipper, and M. S. Capcarrère. "Design, Observation, Surprise! A Test of Emergence." *Artificial Life Journal*, Volume 5, Number 3, pages 225-239, Summer 1999. The MIT Press, Cambridge, MA.