Why Life? Origins of Life elsewhere in the Universe

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There is a thriving field of research studying the origins of life, as it occurred on Earth. Given life as we know it, we can ask the question how it originated, how the transition from chemistry to biology took place on our own planet. And in order to ask that question, we can try to characterize the life we know, by asking what are the most essential aspects of life. In 1944, this led Schroedinger to write his classic book "What is Life?", and since then several other authors have written books with the same title.

So far, nobody has been able to give a convincing answer. When we move our attention from the Earth to other planets, and especially to exoplanets, we encounter a second handicap. We don't know what forms life can take elsewhere, and whether it would have any resemblance to our carbon-based forms of life on Earth.

For exoplanets, a better question would be "Why Life?" to study the nature of the transition from relatively simple to truly complex systems. The question "how did chemistry give rise to biology?" is then seen as a specific example of the more universal question "what is the nature of the phase transition leading to complexity?" or simply "Why life?" which leads to the question "What can Life be?"