

The state of Astrobiology

From the President of the International Society for Studying the Origins of Life (ISSOL)



As the incoming president for the International Society for the Study of the Origin of Life, I was asked several months ago to offer my opinion of the state of Astrobiology. It's taken me those several months to decide what I thought would be important to convey, to the researchers who have been a part of this field before there were viable funding initiatives, to the fresh new, young converts to Astrobiology, or to those considering joining the astrobiology movement. Before I offer my opinion, it might help to understand the context in which I will be offering it.

There are two historic events that to my mind have shaped the initiation and progress of the field of Astrobiology. The first is something that is so much a part of global life today that most people reading this might not realize its affect: the internet. As a beginning graduate student in 1987, hypertext was only just beginning to surface and access to the word wide web, was, well, not so world-wide. Email was happening, but the potential that the internet would provide the world community, especially science researchers, was about to revolutionize the way we interacted with each other. Communication efforts, and subsequently, collaborative efforts, bound previously by either geographic closeness or long-distance phone calls, were about to be irrelevant considerations. And this was a good thing, because massive amounts of data in disciplines as varied as molecular biology and cosmochemistry were being generated. Public databases of all kinds showed up as resources on the web; anybody could access them.

Researchers are smart people. Those studying origin of life questions and the nature and evolution of living systems figured out pretty quickly that it was all well and good to devise wonderfully clever prebiotic experiments in the laboratory but unless you had the environmental context to place them in, whether that be local ecology or galactic

habitable zones, you might have trouble designing your next set of experiments that could lead you to a more accurate simulation of the way life evolved. The problem was there wasn't a lot of funding for such widely disparate groups to propose collaborative research. So, all this data, and all these good people, were led to the next big boon for Astrobiology, NASA's Astrobiology Institute. Established in 1998, the NAI was developed to provide a scientific framework for NASA missions. To me as a fresh eyed PhD, it was a no brainer. The NAI was going to use the incredible communicative powers of the internet to join researchers, virtually. Researchers, whose disparate fields of study might bear on the search for extraterrestrial life and our space missions to discover them, were invited to join forces and submit interdisciplinary projects. The NAI would facilitate these with state-of-the-art internet communication advances, oh yea, and money.

Once there was money behind these interdisciplinary teams, the idea of Astrobiology caught on. An idea whose time had come for origin of life researchers we were bound to make faster progress with interdisciplinary teams working together. The NAI provided terrific impetus for that. Once the vision of NAI turned to encouragement of international participation, Astrobiology became a global effort.

So where is Astrobiology now and where is it going? We know from experience that funding can be fickle. It's an uphill climb to convince universities to offer degrees to graduate students in Astrobiology. But equally true is the fact that through the ups and downs of Astrobiology, cross fertilization of disciplines in teams of scientists was a success, a big one. Astrobiology, as much a philosophy as anything, is the vehicle to help us improve our search and understanding for the origin and evolution of life. It is the logical effort that takes advantage of worldwide data and knowledge and expertise, and insures that everyone has the opportunity to consider their individual research in a larger context.

The future of Astrobiology as a discipline, unfortunately, will largely be about money. My guess is that the obvious quality of the body of work that Astrobiology money has fueled will prosper in the end at least I hope so. But we can only wait and see. Regardless, I think the future of Astrobiology as a philosophical approach to origin of life science is assured. The teams of researchers, the collaborations, and the young students who find this expanded view of multidisciplinary research valuable and rewarding probably ensures that Astrobiology, in one form or another, is here to stay.