
”What roles for viruses in origin of life scenarios?”

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Abstract

Session: Roles of viruses in Ecology, Evolution and Origins of life (Luis Villareal, Stéphan Jaquet, Gladys Kostyrka)

Until the 1960s, viruses were often central in origin-of-life-theorizing. In the debate opposing metabolic and genetic approaches on the origin of life question, viruses were used by the proponents of the last approach in three different ways (Podolsky, 1996). First, the virus, taken as a metaphor of life, let open the possibility that life appeared under the form of pure genes, in a non-metabolic fashion. Second, the virus could be seen as an ”operational model”: understanding how the virus operates may help understanding, by analogy, how life could have emerged. Third, viruses as a phylogenetic lineage could be seen as ”living fossils”, descendants of the first life form.

Today, viruses are not central in origin-of-life scenarios anymore [Lopez-Garcia & Moreira 2012]. And yet they are still part of the debates, and may play some important roles, according to different scenarios [Forterre 2005, 2009; Koonin 2006]. After a brief description of the present structure of origin-of-life-research and the different types of explanation used in this field [Malaterre 2010], I describe how viruses are integrated – or not – in this structure, depending on the meaning scientists give to the words ”origin” and ”viruses.” I then analyze why and how the roles played by viruses in origin-of-life scenarios evolved from the 1960s until now. I particularly focus on two questions: how far do some specific definitions of viruses influence the way scientists formulate hypotheses about their roles in origin-of-life-scenarios? Do viruses still play a role in the maintenance of the dichotomy between the metabolic and genetic approaches?

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