
Viruses: Essential Agents of Life

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Abstract

Research abstract

For the last 15 years, I have focused my study on the general role of virus evolution on Life. In the last decade metagenomic assessments have led us to realize that viruses are the dominate biological entities of the biosphere and are the most numerous, diverse and dynamic genetic agents on Earth. Although viruses have long been dismissed from the Tree of Life a simply destructive and selfish extra-genomic genetic parasites, comparative genomics now makes it clear that viral colonization distinguishes all domains of life. I have been pursuing how and why some viruses (and their defective relatives, transposons) are able to stably persist in their host and sometimes become a colonizer of the host genome. The ability of a virus to persist is a transforming event for host population survival and requires specific mechanisms and strategies. These viral derived mechanisms, however, provide new mechanisms of immunity and identity for the host. I am now tracing how viruses have contributed to host group survival from bacteria to human social evolution.

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