They replicate and evolve, but are not alive: Fighting viruses challenges our definitions of life

Scientists have argued for hundreds of years over how to classify viruses, says Luis Villarreal, professor emeritus at the University of California, Irvine, where he founded the Center for Virus Research. In the 1700s, viruses were believed to be poisons. In the 1800s, they were called biological particles. By the early 1900s, they'd been demoted to inert chemicals.

Throughout, viruses have rarely been considered alive. More than 120 definitions of life exist today, and most require metabolism, a set of chemical reactions that produce energy. Viruses do not metabolize.

For these reasons and others, the debate over whether viruses are alive or not continues today. In 2004, virologists Marc H.V. Van Regenmortel of the University of Strasbourg in France and Brian Mahy, then at the U.S. Centers for Disease Control and Prevention, defined viruses as "nonliving infectious entities that can be said, at best, to lead a kind of borrowed life."

Or maybe a virus can be both nonliving *and* alive. In 2011, biologist Patrick Forterre of the Pasteur Institute in Paris argued that viruses alternate between an inactive state (outside a cell) and a living, metabolically active state (inside a cell) that he calls the virocell.

This is an excerpt. Read the original post here.