Viruses infect plankton in rhythm

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Video Byte

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Abstract

Across all three domains of life, organisms have adapted to earth's natural light-dark cycle, setting their genetic, metabolic, and behavioral clocks to it. That includes the single-celled cyanobacterium *Prochlorococcus*, one of the most dominant phytoplankton in the oceans. Recent lab experiments revealed that cyanophages, viruses that infect *Prochlorococcus*, also show light-dark rhythms and express different genes according to their stage of infection: early, middle, or late. But whether that phenomenon occurs in the open ocean remained unclear. To find out, researchers analyzed genetic material from the North Pacific Subtropical Gyre. They set out to test whether cyanophages express infection genes in unsynchronized or synchronized patterns. In unsynchronized expression, early, middle, and late infection genes are transcribed at any time. While in synchronized expression, gene transcription evolves with the time of day. Early genes, for example, are expressed at sunrise and late genes close to sunset. Understanding this mass synchronized infection is critical, as it affects one of the biggest cogs in the planet's carbon cycle.