

Abstract

Imaging Viral Factories [†]

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Abstract: Viruses remodel cellular compartments to build their replication factories. Remarkably, viruses are also able to induce new membranes and new organelles. As a result of recent advances in light and transmission electron microscopy (TEM), we are starting to become aware of the variety of structures that viruses assemble inside cells. Viral factories are intracellular compartments harboring replication organelles that contain viral replication complexes and the sites of virus particle assembly. This lecture will revise the most relevant imaging technologies for studying the biogenesis of viral replication factories. Live cell microscopy, correlative light and electron microscopy, cryo-TEM, and three-dimensional imaging methods are unveiling how viruses manipulate cell organization. In particular, methods for molecular mapping in situ, in two and three dimensions, are revealing how macromolecular complexes build functional replication complexes inside infected cells. The combination of all these imaging approaches is uncovering the viral lifecycle events with a detail never seen before.

Keywords: virus factories; light microscopy; electron microscopy; correlative light and electron microscopy; three-dimensional imaging; live-cell imaging; cryo-microscopy



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