

Abstract for an Invited Paper
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Cryo-Electron Microscopy of Viruses Infecting Bacterium¹

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Single particle cryo-EM can yield structures of infectious bacterial viruses with and without imposed icosahedral symmetry at sub-nanometer resolution. Reconstructions of infectious and empty phage particles show substantial differences in the portal vertex protein complex at one of the 12 pentameric vertices in the icosahedral virus particle through which the viral genomes are packaged or released. In addition, electron cryo-tomography of viruses during infecting its bacterial host cell displayed multiple conformations of the tail fiber of the virus. Our structural observations by single particle and tomographic reconstructions suggest a mechanism whereby the viral tail fibers, upon binding to the host cell, induce a cascade of structural alterations of the portal vertex protein complex that triggers DNA release.

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