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Poster #50: The permanent replication cycle potential in Chimalliviridae

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Until recently, phages were classified according to a binary system that distinguished clearly between lytic and lysogenic life cycles, either actively lysing the host cell or with the potential to integrate as prophages into the bacterial genome. However, recent studies challenge this dichotomy, suggesting that virulent phages with a strictly lytic lifecycle may maintain a permanent infection state within their host cells. Bacterial assemblies sequenced from single clones contained in about 0.1% of the cases virulent Chimalliviridae phages suggesting a permanent presence in bacterial isolates [1, 2]. These phages form nucleus-like compartments, thereby enabling them to operate largely independently of the host cellular machinery [3]. We hypothesize that nucleus-forming phages enter a state of permanent coexistence with the host, which is induced under adverse conditions and provides this phage family with an advantage over other phages that could impact also their therapeutic potential.

Reference #1

Dougherty, P. E. et al. Persistent virulent phages exist in bacterial isolates. Nat. Microbiol. 11(1), 31-

Reference #2

Perfilyev, A., Gæde, A., Hooton, S. et al. Large-scale analysis of bacterial genomes reveals thousands of

Reference #3

Prichard, A. \textbackslash{}\& Pogliano, J. The intricate organizational strategy of nucleus-forming phag

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