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Novel mycobacteriophages Crespo and Dietrick: a comparison of genome length and structure

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Two novel mycobacteriophages, Crespo and Dietrick, were isolated, characterized, and annotated by students in the Virginia Tech Phage Hunters laboratory during the 2017-2018 academic year. Crespo belongs to the G1 subcluster, a group of phage with relatively short genomes, while Dietrick is a C1 phage. Phages in the C cluster are known for having large genomes. Dietrick’s genome size (153,582 bp) is over three times larger than that of Crespo (41,902 bp). Additionally, Dietrick is a lytic myoviridae phage, while Crespo displays the more common siphoviridae morphology and contains genes typically found in temperate phages. Crespo and Dietrick are excellent models to compare and contrast genetic elements related to both morphology and life cycles. The massive difference in genome size also offers insight into the minimal number of genes needed for a phage to function and highlights genes that likely perform other non-crucial roles.