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Chewbacca, Riparian and Reptar3000, three novel M. smegmatis phages from the Las Vegas area

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We present phages Chewbacca, Riparian, and Reptar3000, three novel Mycobacterium smegmatis phages from the Las Vegas area. These are the first phages of the SEA-PHAGES program from the Las Vegas area. Riparian was isolated from soil from a pond in Las Vegas Wetlands Park and belongs to cluster R, a relatively small cluster that consists of only 6 phages. Riparian has the largest genome of the three phages at 71199 bp, and we have identified 100 genes. Its GC content is 56% and it has circularly permuted genome ends. Chewbacca was isolated from soil in a residential area and belongs to cluster N. Its genome is 43575 bp and we have identified 74 genes. It has 3’ sticky overhang genome ends and its GC content is 66.2%. Reptar3000 was isolated from soil in a residential area and belongs to cluster K, a relatively large cluster consisting of 114 phages. Its genome is 54601 bp long and we have identified 89 genes. Reptar3000 has 3’ sticky overhands and GC content 67.6%. It has one tRNA gene. The three phages appear equidistant from each other in terms of nucleotide sequence identity (~40% nucleotide sequence identity to each other). The three phages we have isolated are not closely related and show there is diversity among M. smegmatis phages in the Las Vegas area. The Las Vegas area is distinguished from other SEA-PHAGES locations by its exceptionally long, hot and dry summers, with temperatures consistently above 100 degrees and humidity in the single digits for at least 4 months of the year. Consequently it is possible that phages from the Las Vegas area may have evolved unique adaptations to these conditions. Work is ongoing to identify unusual features in these phages.