

## **Isolation and characterization of three bacteriophages targeting *Acinetobacter baumannii* AB5075**

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*Acinetobacter baumannii* is emerging as one of the most challenging bacterial pathogens to manage and treat in hospitals worldwide due to its increasing resistance to all currently available antibiotics. *Acinetobacter baumannii* accounts for 20% of infections across ICUs worldwide, with a mortality rate greater than 50%. Because of its threat to human health, *A. baumannii* is currently classified by the World Health Organization (WHO) as a critical priority pathogen for which new treatment options are urgently needed.

Using bacteriophages to treat bacterial infections, commonly called phage therapy, is gaining interest as a promising alternative treatment option for infections caused by antibiotic-resistant bacteria. However, there are currently only 184 bacteriophages targeting *A. baumannii* with genome sequences that are complete and publicly available. The goal of this research is to isolate and characterize lytic bacteriophages that target the model strain of *A. baumannii* called AB5075.

Three phages were successfully isolated from activated sludge obtained at the Des Moines Metropolitan Wastewater Reclamation Authority. Phage morphology was assessed using transmission electron microscopy. These phages have distinct dimensions, indicating that they are different phages. However, they each exhibit a myophage morphology, possessing icosahedral heads and contractile tails. In the near future, the host range, genome, and growth characteristics of these phages will be characterized.

Ultimately, this research aims to increase our knowledge of bacteriophages that target *A. baumannii* and add to a growing collection of phages for potential therapeutic use against this notoriously antibiotic-resistant pathogen.