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Poster #72: Investigating the mechanism of mRNA export from the early phage infection compartment of jumbo phage PhiKZ

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Early during infection of the opportunistic pathogen *Pseudomonas aeruginosa*, the jumbo bacteriophage PhiKZ forms a membrane-bound Early Phage Infection (EPI) compartment. This compartment spatially separates early viral transcription from the bacterial cytoplasm, while translation remains dependent on host ribosomes outside the EPI. How newly synthesised viral mRNA molecules are exported across the EPI membrane for cytoplasmic translation remains unknown.

To investigate the mechanism of viral mRNA export, we utilise a workflow combining programmable antisense oligonucleotides (ASOs) to inhibit the translation of candidate proteins potentially involved in export with single-molecule fluorescence *in situ* hybridisation (smFISH) to visualise and characterise early phage transcripts at single-cell resolution. We aim not only to determine how perturbing candidate factors affects phage infection dynamics and EPI maturation, but also to elucidate the PhiKZ machinery responsible for early mRNA export.

Reference #1

Gerovac M, Buhlmann L, Zhu Y, et al. Programmable antisense oligomers for phage functional genomics. Natu

Reference #2

Reference #3

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