

Reviewer 3:

Title

Structural studies on the bacteriophage phi6 and its transformations during its life cycle.

Summary

Bacteriophage phi6 is an attractive model system that includes a viral envelope, dramatic conformational shifts, and discrete functional regulators. This manuscript reviews the structural transformations of phi6, as it progresses through its lifecycle, and the physical or chemical communication of checkpoints that enable the virus to respond to each stage. As with all great reviews, it raises new questions at the edge of the known field.

Major comments

This manuscript is delightfully well-written. I have no major comments.

Minor comments

Page 2 and 12: Segment capitalization is variable, mostly lowercase but at least two instances of uppercase. Typically not a big deal but in this font the lowercase looks like the number 1, and the L segment figures prominently in the description of regulation and dosing.

I explained in footnote 1 that the ssRNA and dsRNA segments are denoted in lower and upper case, respectively, according to the accepted convention for bacteriophage Φ6. I added another clarification in line 59.

Page 4: unformatted reference.

Fixed.

Page 6: spaces between phi 8 and 13.

Fixed.

Page 10: Eject or inject? Author's choice here, but genome ejection is usually from the capsid and here it is unclear if this is ejection from the replication complex but into the capsid during packaging. I am not following the direction of operations in this passage, please clarify.

I clarified that the transcription occurs inside the capsid and that the ssRNA transcript is ejected through P4.