

TE: Think of the Next Experiment

Questions and Problems

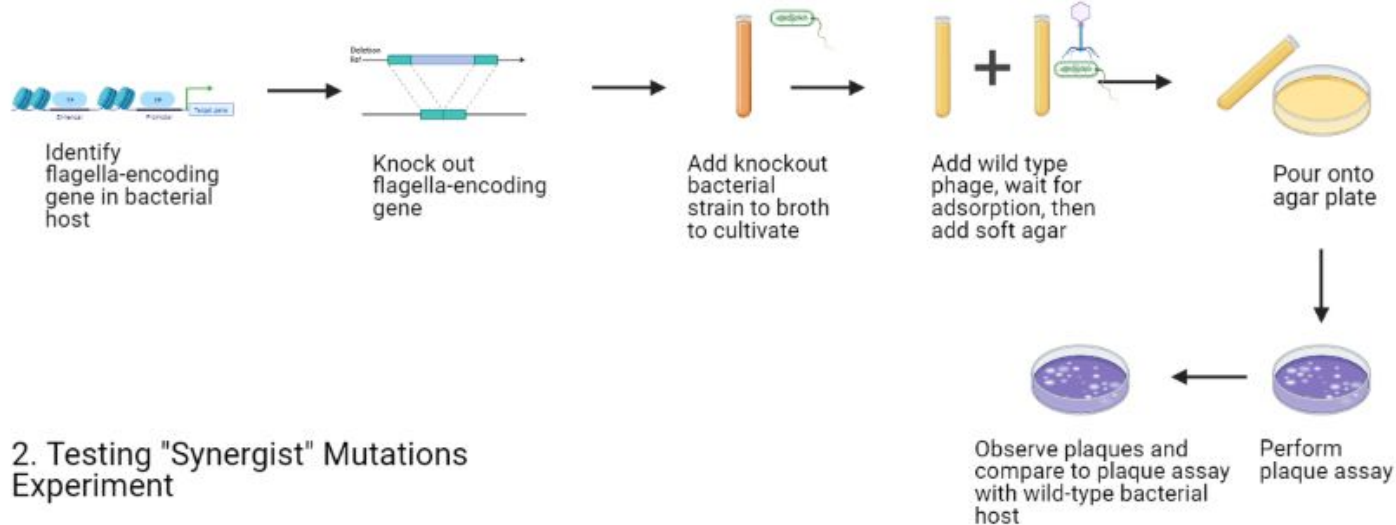
- Problems with the Paper
 - The experiments that the researchers conducted were integral in answering their questions
 - However, I had the most difficulty with the methods section because they were not very comprehensive. I had many questions regarding the techniques mentioned and am still confused about various methods even after reading the paper several times. I think the paper could have provided more information about the steps outlined in the methods section. For example, they said a mobility assay was performed, but did not describe the conditions or controls of this assay.
 - I think the scale of the experiment is a good start to answering the question. A lot more needs to be done since this experiment was very narrow and specific.
- Questions that were not addressed
 - I had many questions that were not addressed while reading the paper.
 - My questions are included in my analysis report for each experiment. Some include:
 - How were the bacterial clones created and tested for mobility? Were they taken from the plaque assays and mixed with broth, then plated on agar?
 - What methods did they use to purify the genomic DNA of the phages and host bacteria?
 - Why did they only test the phage against PRB-4? What not the other strains? Was this chosen randomly?
 - Why were four mutants selected for the binding assay? What about the other two?
 - What programs/software was used to visualize the transmembrane domains?
 - Most of my questions were about the methods section since I was confused about many of the steps or lack of steps thereof.
- Questions that can be answered in the future
 - The author did mention ideas that require further exploration. For example, they stated that the flagellum has been proven to be phage-binding receptor of some phages. I would like to learn more about which phages they were referring to and if it applied to the phage in this experiment.
 - I am still curious as to how the researchers tested the synergism of the three phage mutations mentioned. Did they try using only two mutations and observed what happened? I think this would be an interesting experiment.
 - I think it would also be interesting to perform some kind of microscopy experiment to observe phage-host interactions. This would help elucidate the binding mechanisms of the phage and phage mutants.
 - Another interesting experiment would be to knockout the flagella to see if the flagella truly plays a role in the phage binding to it.

Designing New Experiments

- Knockout experiments to test “synergistic” mutations
- Microscopy experiment
- Knockout flagella on bacterial host to see if phages will still bind to it

New Experiments

1. Knockout Flagella Experiment



2. Testing "Synergist" Mutations Experiment

