



# CALIFORNIA STATE SCIENCE FAIR 2015 PROJECT SUMMARY

<b>Name(s)</b> <b>Michelle Essien; Everett Kim</b>	<b>Project Number</b> <b>S1510</b>
<b>Project Title</b> <b>Efficiency of Viral Phage T4 in Combating E. coli</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The scientific experiment, Viral Phage Efficiency in Combating Escherichia Coli B. will investigate an alternative treatment through the utilization of the viral phage, T4r. The objective of this project is to test the efficiency and pave the way for future studies in bacteriophage therapy and productions of disinfectants and pesticides. We believe that the viral phage T4r will effectively eradicate the Escherichia Coli B, infecting the bacterium exponentially until all of the bacterium have been infected, at which point, the virus will revert into a dormant stage. <b>Methods/Materials</b> During the first phase of the experiment, E. Coli was scraped onto the petri dish in a zig-zag formation to produce variations in bacterial formation concentration. The second phase of the experiment tested bacteria cultured in non-uniform concentrations kept at a stable 98.7 degrees Fahrenheit in order to mimic circumstances within the human body. <b>Results</b> During the first phase of the experiment, E. Coli was scraped onto the petri dish in a zig-zag formation to produce variations in bacterial formation concentration. Viral phages were fairly efficient at eliminating and/or containing bacterial growth higher concentrations of the viral phage at room temperature. The second phase of the experiment tested bacteria cultured in non-uniform concentrations kept at a stable 98.7 degrees Fahrenheit in order to mimic circumstances within the human body. Under these circumstances the viral phage was very effective at killing off bacteria, with higher concentrations of viral phages killing or containing bacterial growth after 12 hours of observation, and all concentrations limiting or ceasing bacterial growth after 24 hours. These <b>Conclusions/Discussion</b> These results demonstrate that the viral phage may be an effective treatment of bacterial infections within warm-blooded organisms. Viral phage treatments may also prove fairly effective in applications such as pesticides, but further testing must be conducted to determine the ability of the viral phages to survive in inconsistent environments.	
<b>Summary Statement</b> Testingt the efficiency of the viral phage T4r at combating Escherichia Coli B.	
<b>Help Received</b> Advisor provided a labratory, some lab supplies, and advice.	