



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Kevin R. Kaufmann	Project Number S1711
Project Title Engineering Phage to Treat Bacterial Infections	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals This project was done to test the viability of using bacteriophages as delivery mechanisms for organic materials to fight bacterial infections, and compare the results to currently used antibiotics.</p> <p>Methods/Materials A bacteriophage (a virus that specifically infects bacteria) that has a negative expression is used as the delivery mechanism. Materials that carry a positive charge can be bound to E4 phage. The materials that will be tested include perforin and a small range of polysaccharide degrading enzymes. The polysaccharide degrading enzymes ability to bind will be tested for the treatment of bacteria that have a cell wall. After the materials are bound, 30 micrograms will be applied to Petri dishes fully inoculated with E. coli. The Petri dishes will be allowed to grow for 48-72 hours and then observed for a zone of inhibition.</p> <p>The results of the tests with bacteriophage as a delivery mechanism will be compared with results of common wide range antibiotics Tetracycline and Chloramphenicol. Thirty microgram dosages will be applied to Petri dishes fully inoculated with E. coli. The Petri dishes will be allowed to grow for 48-72 hours and then observed for a zone of inhibition.</p> <p>Conclusions/Discussion If the bacteriophage creates a larger zone of inhibition, it will open a new less toxic form of treatment for bacterial infections. This form of treatment will be less stressful on the body compared to antibiotics that can have very dangerous side effects and stress the liver.</p>	
Summary Statement The purpose of this project was to create an alternate and more effective form of treatment for bacterial infections.	
Help Received Used lab equipment at Center for Advanced Research and Technology (CART) under Mrs. Hayes.	