CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
Jacqueline M. Havens

Project Number
S1311

Project Title
Isolation, Identification, and Characterization of Four Antibiotic-Resistant Soil Bacteria

Abstract

Objectives/Goals
I isolated four different strains of antibiotic resistant bacteria and wanted to isolate the plasmids to determine the nature of the acquiring antibiotic resistance.

Methods/Materials
I grow the bacteria on agar plates with Tetracycline, Kanamycin, or Amphicillin. If the bacteria grew on the plate,it is antibiotic resistant. To find if there is any multiple resistance, I grew each bacteria (12 samples from each plate) on the other two antibiotics. I purify plasmids with a Qiagen kit (which didn#t work) or with the alkaline-lysis method. I use a spectrophotometer to see how much DNA there is. I then try to transform the plasmids into competent bacteria unsuccessfully. I run the results from the alkaline lysis in gels to try to see the plasmid. Since the plasmid didn#t run far in the gels, I use restriction enzymes to cut the plasmids and re-run the gels next to uncut samples.

Results
I identified four different strains of antibiotic resistant bacteria based on types of antibiotic resistance: amp, tet/amp, kan, and kan/amp.

Conclusions/Discussion
It is unclear how these bacteria acquired antibiotic resistance. Once I have isolated the plasmid as a source of antibiotic resistance, I plan to sequence the plasmid to see if the genes carried are natural or synthetic when compared to genetically engineered agriculture.

Summary Statement
I have found bacteria with antibiotic resistance and trying to determine how they got it.

Help Received
Used lab equipment at UCI under the supervision of Dr. Gardiner.