# The Effect of Fibroin Proteins in Spider Silk on Escherichia coli

Voulgaropoulos, Alexis

The purpose of this experiment was to test whether the fibroin protein from spider silk inhibits the growth of Escherichia coli. It was hypothesized that fibroin would inhibit the growth of E.coli. To test the hypothesis, the fibroin protein was extracted from pure spider silk with lithium bromide through a dialysis process. The extracted protein solution and E.coli were added to petri dishes along with appropriate controls to assess growth. After eight days, the E.coli plates grown with pure fibroin averaged 64.8% fewer colonies than the control. The E.coli plates grown with cobweb fibroin averaged 76.0% fewer colonies than the control. The control plate grown with LiBr showed enhanced growth with 144% more colonies than the E.coli control, showing that LiBr did not contribute to growth inhibition. It was concluded that both the pure and the cobweb fibroin successfully inhibited the growth of E.coli. Further experimentation is needed to determine if fibroin has sufficient antibiotic activity to treat disease.

**Awards Won:**