# JUDY CHEN ('18)

## CELL & MOLECULAR BIOLOGY AND CHEMISTRY

**Project**

*Biochemical Mechanism of TU-1, a New Antibiotic Drug*

**Faculty Mentor**

*David Mullin, Ph.D.*

The advent of modern medicine in the 19th and 20th centuries drastically improved the knowledge, detection, and treatment of infectious diseases caused by bacteria. Unfortunately, the wide spread overuse and misuse of antibiotics has selected for a growing number of bacterial strains that have developed resistance to a wide range of therapeutic drugs. My research project seeks to investigate TU-1, a member of a new class of antibacterial drugs under development in the Mulllin lab. So far I have determined the minimum inhibitory concentration (MIC) of TU-1 for a variety of gram positive and gram negative bacterial pathogens, and have investigated the kinetics of growth inhibition of cultures of Staphylococcus aureus strain MLS1 at various fold concentrations of the MIC.

From the killing kinetic experiment, I have found that strain TU-1 is bactericidal because at each of the concentrations tested, viability of the Staphylococcus aureus cells dropped by more than 1000-fold. Using the same approach, I found that the viability of stationary phase cultures of strain MLS1 was unaffected by TU-1. The results from these initial tests suggest that TU-1 is a potent antibacterial agent that might hold promise for development into a therapeutic antibacterial agent. Future studies aim to identify the molecular target of TU-1 and its biochemical mechanism of action.

***This research was completed with partial funding from the Georges Lurcy Grant Program.***