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Introduction and background: Our laboratory focuses on two areas of discovery. First, we work in chlamydial biology and genomics. Work in this subject area would allow a student to develop tools in bioinformatics and laboratory manipulation of bacteria and of DNA, and would be very appropriate for a student who wishes to pursue an academic research career after their veterinary curriculum is complete. The second option is to participate in toxicity analyses of novel antimicrobials with activity against different microbes. It is likely that this option would be useful for a student interested in physiology and pathology, as well as anyone interested in laboratory animal medicine as a career option.

Project one- genome sequencing: We are working on the technology to do rapid genome sequencing of patient samples from clinical swabs. While this technology is being developed for Chlamydia, it could be adjusted to work with any pathogen of interest. A student working on this project would help collect material from pre-existing swabs, and conduct al the steps to complete a genome sequence from those swabs. This project is complicated because there are many bacteria on the swab, and this we need to eliminate DNA or bacteria that we are not interested in. This is a really interesting project that would touch on many aspects of contemporary laboratory genetic analyses.

Project two- toxicity analysis: In conjunction with scientists at a local biotechnology company, we have identified a set of novel chemical compounds that have activity against a spectrum of different microorganisms. The strains were identified in a high throughput screen of 42,000 independent compounds, using growth of *Chlamydia caviae* as the readout. We have a goal of assessing their utility as candidate lead compounds in the identification of novel antimicrobials against intracellular bacteria. One of the first things we need to do is ask whether the compounds are toxic to mice following administration orally or via injection. This project would involve a lot of work with mice, both in the care of infected animals and in the analysis of tissues following sacrifice of treated animals. Collectively this work would provide the researcher with experience in animal handling and with toxicity measurements important in the development of novel therapeutic compounds.