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Department/Organization Affiliation:

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Preferred Method of Contact: email

Project Name(s): The ocular microbiome in health and disease

General Topic (Keywords): Chlamydia trachomatis, other Chlamydiaceae species, functional genomics, microbiota, metabolomics

Project Description(s): Chlamydia trachomatis (Ct) is the leading cause of preventable blindness worldwide with an estimated 600 million cases with 9 million blind and over 150 million at risk for visual impairment or blindness. This blinding eye disease is called trachoma and is found in developing countries worldwide. While we know that Ct is a cause of trachoma, other Chlamydiaceae species have been implicated in disease pathogenesis, namely C. pneumonia, C. psittaci, C. pecorum and C. suis. But we lack appropriate knowledge about other microbes that many contribute to ocular disease in trachoma endemic areas. Therefore, we will be studying the microbiota among patients with and without trachoma, and with and without Chlamydia infection, in samples from populations in trachoma endemic regions of Nepal, Ethiopia and Vietnam. We will employ genomics to identify all organisms present at the species level, metabolomics to identify metabolic profiles, and transcriptomics to identify gene expression profiles that will enhance our understanding of what constitutes a healthy conjunctiva and what contributes the trachomatous conjunctiva. This research will aid in the development of tests to detect ocular pathogens and provide invaluable data for drug targets and chlamydial vaccine development.
**Desired Skills or Experience:** Undergrad interested in a multidimensional and fulfilling lab experience – no prior experience required although some courses in molecular biology and/or genetics would be helpful.

**Time Commitment:** Full time in summer and then part time during the academic year for those students interested in continuing; the project could become a senior thesis.

**Preferred Starting Date:** Late May