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Department/Organization Affiliation:
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Preferred Method of Contact: email

Project Name(s): Pathogenesis and genomics of *Chlamydia trachomatis* sexually transmitted and ocular infections.

General Topic (keywords): *Chlamydia trachomatis*, pathogenesis, genomics, host genetic susceptibility, mucosal immunity, *ex vivo* tissue, strain typing, global patient populations

Project Description(s): *Chlamydia trachomatis* (*Ct*) is the leading cause of bacterial sexually transmitted infections (STIs) and preventable blindness worldwide. Over 10 million people develop chlamydia STIs each year in the US with untold numbers among ocular trachoma patients in developing countries. Trachoma is a chronic ocular infection caused by *Ct*. The majority of infections are asymptomatic in both men and women and can result in the severe complications of pelvic inflammatory disease, infertility, ectopic pregnancy and chronic pelvic pain or blindness. Recurrence of infection likely results from persistent infections and also from reinfection. Disease progression is likely immune based and may be related to host genetic factors. Very little is known about the genomic diversity of *Ct* strains, host immune responses or host genetic susceptibility to inflammation and disease related to *Ct* ocular and sexually transmitted infections. We will evaluate mucosal immunity, including the inflammasome, single nucleotide polymorphisms (SNP) in inflammatory genes and HLA types among patients with and without disease along with genomic/genetic factors in *Ct* that may play a role in disease outcome. We will use primary human endocervical, endometrial and conjunctival cells in
addition to studying different global patient populations. In this way, we will develop a better understanding of the host-pathogen interrelationship and disease pathogenesis for chlamydial infections to further drug target and 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