



Brazil - Bacterial Infection Research

[Lee Riley](#) (UCB), Brazilian collaborator depending on project

Background: The Riley laboratory has been involved in collaborative projects in Brazil since 1990. The collaboration has focused on infectious diseases of importance to urban centers, specifically on infectious diseases of urban slums. Brazil has undergone more than 350% increase in its urban population since 1960. This has engendered completely new types of health problems with magnitude not seen in most developing or developed countries. Urbanization and the explosive increase in shantytown populations have created a new set of health problems: chronic infectious (TB, AIDS, post-infectious cardiovascular and renal diseases) and non-infectious diseases (hypertension, diabetes, asthma, and unintentional and unintentional injuries). A single placement with the Riley lab will be available in Brazil, but the particular project and site will be negotiated once a student joins the lab. The options are outlined below.

Project Description: Possible Project 1 (Oswaldo Cruz Foundation, Salvador): Exploiting the knowledge gained from basic TB pathogenesis research conducted at UC Berkeley, we are evaluating immunological responses in patients with latent infection, to determine responses predictive of those who may progress to active disease. In addition, we are evaluating a new serologic method to monitor response to treatment in those newly diagnosed to have TB. This is done in collaboration with researchers at Oswaldo Cruz Foundation and Octavio Mangabeira Hospital in Salvador, Brazil. A second project in Salvador, also in partnership with the Oswaldo Cruz Foundation, has studied the risk factors and natural history of leptospirosis for 9 years in one favela of a population of 58,000. This collaboration led to the identification of a protein made by the bacterium that causes leptospirosis, which the Brazilian government has adopted to apply for international patent rights for use as a new highly sensitive diagnostic test. Community-based studies have also identified favela-related risk factors that the local city

government has made attempts to correct.

Possible Project 2 (Federal University of Rio de Janeiro): Hospital infections are a major emerging problem in Rio de Janeiro as well as in other major cities of Brazil. For the last 4 years, we have been conducting molecular epidemiologic studies with the Federal University of Rio de Janeiro, to understand risk factors for transmission and characterize pathogens implicated in infections in a large university hospital in Rio.

Possible Project 3 (Federal University of Fluminense): Brazil along with all of Latin America experienced a massive epidemic of Zika virus infections in 2015. During this period a small subset of women who became infected during their pregnancy gave birth to a newborn with congenital manifestations, including microcephaly. Although the epidemic is now over, the epidemic is not yet over for the families with these newborns with congenital Zika syndrome (CZS). Students will work with researchers at FUF where our collaborator (Dr. Claudete Cardoso), a pediatric infectious disease physician, has established a clinic to prospectively follow these children. Participating students will help with analysis of data that have been collected.

Required Qualifications: Some knowledge of Portuguese language (speaking and reading) will be necessary.