

Seminar title:

Optimizing treatments for cutaneous leishmaniasis: winding from *in silico* to *in vivo*

Abstract:

Cutaneous leishmaniasis (CL) is a neglected infectious disease caused by protozoan parasites of the genus *Leishmania*. CL affects on average one million people annually and is endemic in 90 tropical and subtropical countries worldwide. There is no available vaccine. Drug treatments are unacceptably toxic, long and have a high rate of treatment failure (>25%). Control of CL relies on chemotherapy, yet gaps in understanding of the bases of therapeutic outcome impede optimization of drug regimens for available as well as new drugs. Viable *Leishmania* persist in a high proportion of individuals despite clinical resolution, indicating that determinants other than parasite clearance are involved in drug efficacy. How then do immunological functions and antimicrobial drug effects interact to drive the clinical outcome of anti-leishmanial therapy? And are immunological functions targetable pharmacodynamic parameters of anti-leishmanial therapy? Our group and others have taken upon the task of characterizing what comprises healing and non-healing outcomes of human CL, towards addressing this gap. However, this process is extensive and once immersed in it, seemingly reductionist as the outcomes of particular pieces of the puzzle are unlikely to be generalizable to the spectrum of infection and disease of CL on a global scale. This is due to the inherent complexity of an intracellular parasitic infection caused by more than 20 different *Leishmania* species affecting a genetically diverse human population worldwide. How to efficiently address this complexity?

This seminar will address the opportunities and challenges of translational research on CL towards optimization of drugs against neglected infectious diseases.

Short Biosketch:

Maria Adelaida Gómez, PhD., is a Colombian scientist devoted to research on the molecular and cellular aspects of neglected infectious diseases in Colombia. Dr. Gómez conducted her BSc. in Microbiology at Universidad de los Andes, Bogotá, and PhD at McGill University in Montreal. Since 2011 is the Coordinator of the Molecular Biology and Biochemistry Unit at CIDEIM in Cali, Colombia. Her research aims to unravel the host-pathogen interactions and underlying mechanisms that determine the clinical and therapeutic outcomes of human leishmaniasis, as a model of tropical infectious diseases caused by intracellular pathogens. Her research has been funded by Wellcome Trust, US-NIH, WHO/TDR, COLCIENCIAS, among others. Her research has provided demonstrably productive training opportunities for several international as well as national post graduate trainees from multiple national and international universities in Holland, UK, and the United States and across programs in biology, biomedical sciences, engineering, and medicine. The importance of Dr. Gomez' work has been recognized with the 2013 *MIT Technology Review* for Innovators under 35 years in Colombia, the 2014 Gorgas Memorial Institute Research Award of the American Society of Tropical Medicine and Hygiene, as well as numerous merit and travel awards.