Title: Adaptive and Innate Immune Responses to Neglected Tropical Diseases
Venue: San Diego Airport Hilton Hotel
Dates: Jan 9-11, 2010

Rare disease(s) represented: Lymphatic Filariasis, Leishmaniasis, Dengue, Malaria, Chagas Disease, Trichamonas etc.

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Office of Rare Diseases, NIH
Division of Microbiology and Infectious Diseases, NIAID
Division of Allergy, Immunology and Transplant, NIAID

Responsible program contact:
Malla R. Rao, DrPH, M. Eng
Dy Branch Chief
Parasitology and International Programs Branch
DMID, NIAID, NIH
mr8u@nih.gov,
301-451-3749 (Telephone)

Background and Meeting Summary: NTDs and malaria occur in many of the poorest countries of the world, and often have a significant geographic overlap. NTDs are caused by a wide range of organisms (protozoa, bacteria and helminths) and can be transmitted by a variety of vectors (mosquitoes, sandflies, black flies, tsetse flies, triatomine bugs and snails). Increasing evidence points to NTDs as contributors to poverty in these countries. Therefore interventions targeting NTDs could have a significant impact not only on the disease burden, but on the overall economic capacity of the countries where these diseases predominate. For some NTDs there are effective interventions and control programs already in place, however, for other NTDs effective interventions are lacking or therapeutics have severe secondary effects. There is also concern that drugs that are currently effective in control programs may induce resistance. In addition, control strategies targeting the vectors have, in some cases, not been successful in decreasing morbidity and mortality from these diseases. There is, therefore, an urgent need to support research leading to a better understanding of the immunology and pathogenesis of these diseases in the human host to assist in the development of novel and more effective interventions as well as diagnostics. Moreover, recent advances in basic immunology have laid a strong foundation for the development of new vaccines to prevent disease.

Most of the NTD causing agents evade and disable the human immune system, making it difficult for the immune system to fight the disease. In addition, there are polymorphisms of the infecting microbes that might be altering immune responses to the infection and affecting the clinical course of the disease. Clinical manifestations vary according to many factors, not all of which are well-delineated, including the species and variants of the infecting agents, host immune response, the rate of transmission by the vectors, and co-infection with other pathogens such as HIV that affect immune responses.

The meeting was attended by more than fifty attendees, half of whom were international participants. International attendees were represented by participants from both developed countries and countries where Neglected Tropical Diseases are endemic. Drs. Stephanie James, Jie-Oh Lee and Allesandro Sette provided Keynote Addresses and covered broad topics in Immunology and currently available tools to support state-of the art research to address adaptive and innate immune responses to infectious agents. Since most of the Neglected Tropical Diseases are infections caused by parasites, Dr. James presented the synergy between parasitology and immunology. The most recent advances in technologies and developments in assessment of immune responses to Neglected Tropical Diseases infections were presented in two days of presentations by eminent scientists from all over the globe. Novel technologies to express immunogens were presented. Some of these are being translated to products that will undergo testing in humans in near future.