B8: Molecular epidemiology, morbidity and co-morbidity of Bancroftian filariasis in endemic states of India - a community based study  
Aparna Srikantam, J. Subbana, LEPRA – Blue Peter Research Centre

State of the art: Lymphatic filariasis (LF) affects people of all ages and both sexes, particularly of low socioeconomic status (1). Though LF does not cause immediate death, morbidity associated with lymphoedema and elephantiasis is the second leading cause of disability in the world. In India, there are ca. 21 million people with symptomatic filariasis and 27 million microfilaria (mf) carriers from 250 districts in 20 states, with 99% of the cases caused by *Wucheraria bancrofti* (2). National Health Policy 2002 of India aims at eliminating the disease by 2015 by annual mass drug administration (MDA) once a year for at least 5 years in endemic areas (3). In addition to patient non compliance to MDA, pathogen related factors such as genetic heterogeneity and drug resistance of *W. bancroftii* seem to be the underlying problem (4, 5). As little information is available from endemic districts (6, 7), further studies are needed towards a more effective filariasis control programme.

Previous work: LEPRA is involved in prevention of filariasis internationally and is a partner to the USAID funded ‘Neglected Tropical Disease Control Programme’. It has a field based programme for LF present in three highly endemic states of India. The programme facilitates control activities including detection of active cases by community surveys, morbidity management by self care training and community awareness programme for MDA implementation. Field clinics have so far detected about 1000 cases of LF. Each field unit is well connected with the laboratory. We have a laboratory research set up for infectious diseases, enabling ongoing studies on TB and leprosy molecular epidemiology and drug resistance. We detected variations in *M. tuberculosis* strains from TB patients and *rpoB* mutations associated with rifampicin resistance in *M. tuberculosis* and TB treatment failures.

Working hypothesis and work plan: We propose a community based study on genetic heterogeneity and drug resistance of *W. bancroftii* contributing to various degrees of morbidity and treatment efficacy. In addition, the qualitative and quantitative presence of circulating filarial antigens as a surrogate marker for microfilaraemia will be correlated with morbidity and treatment response. Since the proposed study area is also a high HIV-infection area, the association of LF with HIV/AIDS will be estimated, as a similar association has been reported between strongyloidosis and HIV infection (8). 

**Primary objective:** Mapping of active LF cases in defined geographic areas covered by the LEPRA field programme in 2 states of India, *W. bancroftii* genotyping in all LF patients by standard molecular markers and identification of potential new markers for strain typing and drug resistance, studying the correlation of strain types with the morbidity of the patients.

**Secondary objective**, a) periodic study and follow-up of patients for the presence of Circulating Filarial antigen b) Attempt to estimate co morbidity of LF and HIV.

Proposed thesis topics: (1) Molecular epidemiology of bancroftian filariasis in two endemic states of India- a community based study; (2) Clinical and serological profiles of lymphatic filariasis patients in an endemic area and influence of treatment over five years.

Interlinkage: Our student will perform some of the experiments in Dr. Hartmann’s lab, while a student from her lab will stay in Hyderabad during their field study. We will assist Dr. Mockenhaupt with the recruitment of samples and interact with Dr. Ranjan (A7) for bioinformatics expertise during the development of new markers.

(3) National Vector Borne Disease Control Programme, MOHPW, Govt. of India. MASS DRUG ADMINISTRATION. available at http://www.nvbdcp.gov.in/MDA.html  