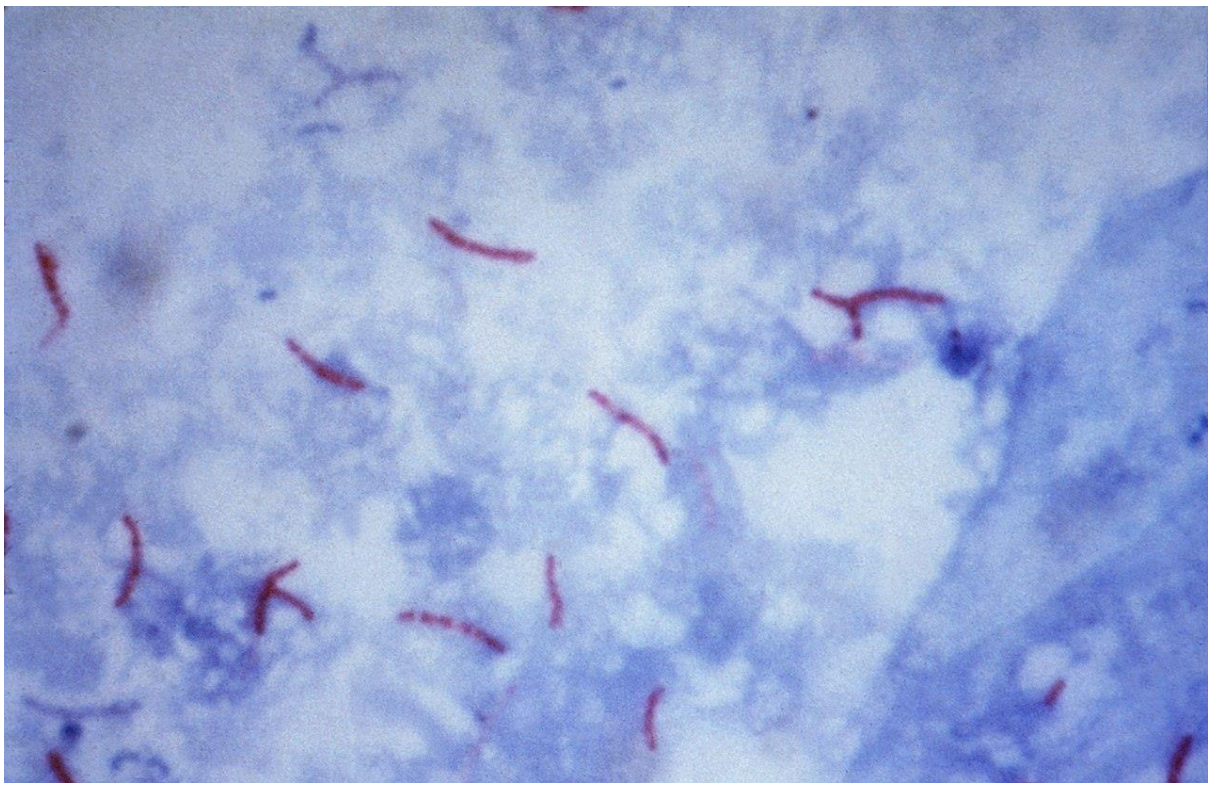
DBT funded study identifies biomarkers for TB

New Delhi, Aug 21: In order to reduce the burden of Tuberculosis, which is an infectious disease, there is a dire need to contain it's spread. One patient with active disease and symptoms such as cough can spread the infection to people who are in close contact with him/her, the most vulnerable being house-hold contacts (HHCs) who share the air-space with a TB patient. However, only some HHCs will develop the disease. Identifying those HHCs who are susceptible may help in preventing tuberculosis in them. Studying how they respond to the bacteria that causes TB (Mycobacterium tuberculosis) is one way of understanding their lack of immunity. This research study was supported by DBT and conducted at Bhagwan Mahavir Medical Research Centre, Hyderabad in collaboration with Univ of Texas Health Center, USA.



About 1,000 HHCs were enrolled in the study and followed-up for three years. The researchers studied their immune responses, such as the types of immune cells involved and their functions at baseline and repeated periodically for three years. Their cells were cultured and stimulated with antigens (proteins) in-vitro, to study their responses specific to Mycobacteria tuberculosis.

The study showed that development of TB in HHCs was not sex, but age dependent: young adults were at a high risk. Some of the immune cells, natural killer cells and T regulatory cells were present in higher numbers in them and their circulating thyroid hormone T4 concentration was low. Further, the levels of cytokines IFN-γ, IL-13 and IL-10 were high but that of IL-1α was low.

In addition to these important findings, the other major highlight of the study was the development of an in-house technique. IFN-γ assay was standardized and developed to determine latent TB infection in HHCs. Being cost-effective, the assay is useful to detect tuberculosis in its latent stage. The group is also working on gene signatures to further understand the mechanism and other pathways involved in TB.

These findings, which are very crucial in identifying high risk young adults have been communicated to a peer-reviewed journal for publication. The biomarkers identified by us help in identifying at-risk HHCs. Immuno-prophylaxis or chemo-prophylaxis in these individuals may contain the disease thus leading to decline in the incidence of TB.

Contact Person Name & Details:
Dr. Vijaya Lakshmi Valluri, Scientist & HOD
Immunology & Molecular Biology Department Bhagawan Mahavir Medical Research Centre
A. C. Guards, Hyderabad 500004 TS, E-mail: vijayavalluri@gmail.com

Dr Ramakrishna Vankayalapati, Professor & Chair,Department of Pulmonary Immunology,
Office: (903) 877-5190, E-mail: krishna.vankayalapati@uthct.edu

DBT website: http://dbtindia.gov.in/