

## CHAPTER 36

### MEDICAL SCIENCES MICROBIOLOGY

#### Doctoral Theses

425. GUMMA (Vidya Nidhi)  
**Mycobacterial Interspersed Repetitive Unit-Variable Number of Tandem Repeat (MIRU-VNTR) Typing of Mycobacterium Tuberculosis Strains Isolated from HIV Positive and HIV Negative Individuals.**  
Supervisors : Dr C P Baveja, Dr. Vinay Kumar Sharma and Dr. Sunil Gupta  
Th 18208

#### *Abstract*

The present study is carried out in the outdoor and indoor patients of Lok Nayak Hospital, New Delhi and Department of Microbiology, Maulana Azad Medical College, New Delhi. Clinical samples are processed for direct microscopy, AFB culture by conventional culture (LJ medium) and AFB culture by radiometric (BACTEC) method. Identification of Mycobacterium tuberculosis is done by standard biochemical tests like Niacin, Catalase and Nitrate reductin test. Drug susceptibility testing is done for Mycobacterium tuberculosis isolates by radiometric proportion method (BACTEC 460 TB system). Mini satellite genotyping is done by MIRU-VNTR typing method.

#### *Contents*

1. Introduction. 2. Aims and objectives. 3. Review of literature. 4. Materials and methods. 5. Result. 6. Discussion. 7. Summary and conclusions. Bibliography.

426. PASRICHA (Rashmi)  
**Functional Analysis of *lprN* Gene of *mce4* Operon of Mycobacterium Tuberculosis.**  
Supervisors : Prof. Mridula Bose and Prof. Vani Brahmachari  
Th 18141

*Abstract*

*Mycobacterium tuberculosis* is a rod shaped bacillus, 1-4 X 0.2 X 0.8  $\mu\text{m}$ , occurring singly, in pairs or in small clumps. *M. tuberculosis* is a slow growing bacterium with a generation time of around 20-24 hrs. The genome of *M. tuberculosis* H37Rv has been sequenced and shown to be 4.41 Mb in size and to contain about 4000 protein-coding genes of which 52% can be assigned a function (Cole ST et. al., 1998). About 376 putative proteins share no homology with known proteins and presumably are unique to *M. tuberculosis*. The availability of this type of information is important for indentifying genes that code for virulence factors and antigens against which host immunity is directed. The work in laboratory showed the potential role of *mce4* operon in the maintenance of tuberculosis in infected animals. The *lprN* (Rv359c) gene is predicted to be lipoprotein (Tekaiia F et. al., 1999). This study explore the cell mediated immune response generated against recombinant purified lipoprotein, LprN of *mce4* operon of *M. tuberculosis*.

*Contents*

1. Introduction. 2. Review of literature. 3. Single nucleotide polymorphism in *mce1* and *mce4* operons of *Mycobacterium tuberculosis*. 4. Cloning and expression of *lprN* Gene of *mce4* operon of *Mycobacterium tuberculosis*. 5. LprN: Lipoprotein characterization. 6. Role of LprN protein in cell mediated immune response. Summary and conclusions.