# Identification of T-cell epitopes on MPB51 antigen of Mycobacterium tuberculosis in BALB/c mice.

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## Abstract

**Background&Objective:** Both CD4+ type 1 helper (Th1) cells and CD8+ T cells play effective roles in protection against Mycobacterium tuberculosis infection. MPB51, a major mycobacterial secreted protein, induces humeral and cellular immune responses against mycobacterial infection. In addition, DNA vaccine encoding MPB51 can induce cellular immune responses and protective immunity upon challenge with M.tuberculosis. This study address to identify T-cell immunodominant epitopes on MPB51 in BALB/c mice.

**Materials&Methods:** We cloned DNA encoding MPB51 molecule in pCI plasmid. After constructing MPB51 DNA-covered gold cartridge, BABL/c mice were immunized by using a gene gun system. Two weeks after the last immunization, the immune spleen cells were cultured in response to synthetic overlapping library peptides covering the mature MPB51 sequence or medium alone. Intracellular and cell culture supernatant gamma interferon (IFN-γ) production was analyzed by using flow cytometry and ELISA, respectively.

**Results:** The findings of present study indicate that DNA vaccination can course strong mmune response only against the peptides contain 21-40 aminoacids. Further analysis with a computer – assisted algorithm permitted the identification of nine aminoacids of (P24-32) as immunodominant CD8+ T cell epitope.

**Conclusion:** This study proved than the MHC class I-peptide (H2-Dd-P24-32) complex is recognized by (IFN-γ)–producing CD8+ T cells. We observed by using T-cell subset depletion that CD8+ T cells are the only P24-32-responded T-cells in BABL/c mice. The data obtained are useful for identifying cellular immune responses against TB and for designing a new vaccine against M.tuberculosis infection.

**Key Words:** T-cell epitope- Tuberculosis- MPB51- DNA vaccine