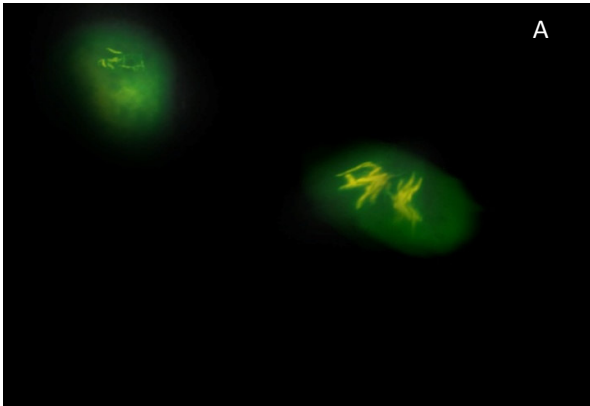


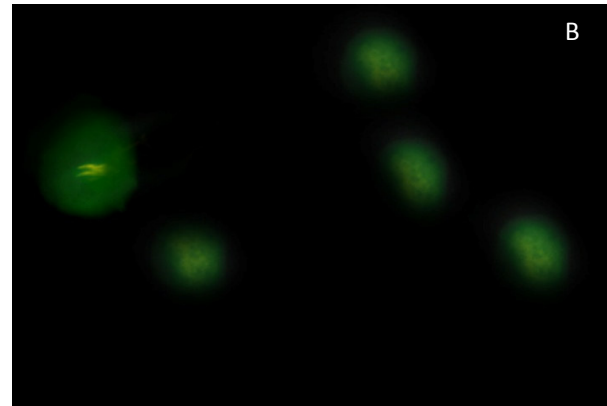
# Path Breaking TB Research at JBTDRC & MGIMS

*SEVA TB ES-31 antigen, an immunogen and biomarker with potential as drug target*

## I. Mycobacterial ES-31 Serine Protease (SEVA TB ES-31 antigen) as potential drug target.



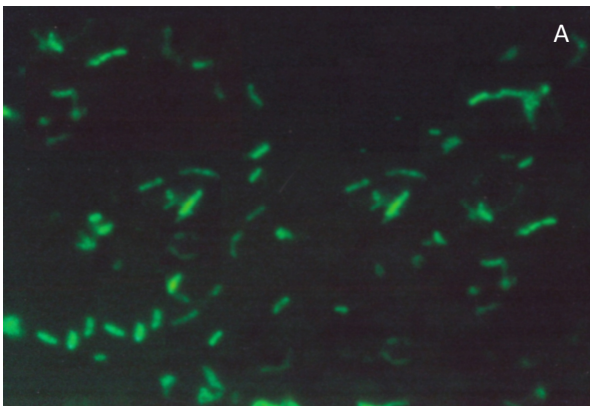
A. Infection of human macrophages by mycobacterial tubercle bacilli (Auramine stained bacilli in macrophages)



B. Blocking of TB infectivity by anti mycobacterial ES-31 serine protease antibody

[Upadhye V, Majumdar A, Gomashe A, Joshi D, Gangane N, Thamke D, Mendiratta D, Harinath BC. Inhibition of Mycobacterium tuberculosis secretory serine protease blocks bacterial multiplication both in axenic culture and in human macrophages. Scand J Infect Dis. 2009 May 27;1-8. (iFirst)]

## II. SEVA TB ES-31 antigen as Biomarker to distinguish M.tb bacilli from other bacteria



A. FITC stained mycobacterial tubercle bacilli (H<sub>37</sub>Rv)



B. Absence of FITC stain on non tubercle mycobacterial bacilli (Nocardia farcinica)

[M. Anindita, V. Upadhye, D. Thamke, D.K. Mendiratta, B.C. Harinath. Mycobacterial ES-31 serine protease – a biomarker for mycobacterium tuberculosis- a preliminary report. Indian J Tuberc 2009;56: 141-143.]