

Effects of overexpression of signal recognition particle receptor (FtsY) in Mycobacteria

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Introduction

A successful pathogen depends on various factors like cell wall components, secreted proteins and enzymes to survive and persist within the host. Understanding the molecular mechanism that enables the bacteria to sustain harsh and stringent environmental conditions is important to design more effective drugs and vaccines. Studies in prokaryotes have shown that FtsY, a component of signal recognition pathway is involved in membrane protein biogenesis, protein secretion and sporulation. Our aim is to investigate the role of *ftsY* in the growth and survival of *M.tuberculosis* under various conditions.

Methods

In order to understand the physiological role of FtsY in mycobacterium we used

chemically inducible recombinant *M.smegmatis* mc²155 to conditionally overexpress FtsY and subjected them to various invitro stress conditions.

RESULTS AND CONCLUSION

Overexpression of FtsY retards growth and sliding motility and altered colony morphology. Localization studies by differential centrifugation showed the presence of the protein in the membrane fraction. Attempts to delete *ftsY* failed in producing any knockouts indicating its essentiality. The observed changes warrant further investigation Experiments are being done to confirm its essentiality and future experiments include macrophage assays using the recombinant *M.tuberculosis* overexpressing FtsY.