

The Newly Identified Proteins Involved in the Chromosome Segregation in Mycobacteria- the Functional Analysis

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Abstract

Chromosome Segregation: Chromosome segregation in bacteria is an active process involving a number of Proteins. In most of the bacteria, it depends on the presence of Par ABS system. Par segregation protein Binds to the parS sequence and forms segregation complexes. ParA segregation protein interacts with ParB complexes being responsible for their distribution. ParA homologs: *C. crescentus* MipZ, *C. glutamicum* PldP. MipZ exhibited nonspecific DNA binding activity similar to ParA-like proteins. **Characteristic Features Of Mycobacteria:** Rod shaped, Slow growing, Gram positive bacteria with Lipid rich cell wall, Resistant to many environmental factors: drying, high and low temperature, high and Low pH. **Unique chromosome organisation and segregation in Mycobacteria:** Chromosome is positioned asymmetrically in *M. smegmatis* cells. OriC is in the off-centre position after oriC duplication, new pole Segrosome migrates faster than old pole segrosome. Mycobacterial cell elongate asymmetrically – the old pole extends faster. ParA in *M. smegmatis*: ParA is responsible for the localisation of the ParB complexes in the cell. parA deletion strain is characterized by slow growth. ParA deletion results in formation 30% of anucleate cells. MSMEG_3743 (Soj) role in *M. smegmatis*: MSMEG_3743 interacts with ParB segregation protein in bacterial two hybrid system. Deletion of msmeG_3743 gene results in: Slower growth rate Division disorders and occurrences of very long cells (over 6, 6 µm), Disorders in chromosome segregation.

The aim of MSc project: Localisation of MSMEG_3743 (Soj) in wild type *Smegmatis* background. Localisation of MSMEG_3743 (Soj) in ParB deletion background – elucidation of ParB influence on Soj localisation. Localisation of MSMEG_3743 (Soj) with ParB-mNeon. Strategies: Exchange of the msmeG_3743 to msmeG_3743-dendra fusion in the native chromosomal locus. Introduction of mcherry-msmeG_3743 in the integrative plasmid.

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Biography

Rudra Suresh is an Assistant Professor at University of Wroclaw, Poland. He has two and half years teaching and research experience in the University. He has also involved in the different research projects at University level and presented work at,

Globally. He published 5 research articles and attended Many Workshop and conferences in India. He belongs From a small Village of Rajasthan in India and is Passionate about teaching and research.