THE ROLE OF THE PROTEINS FtsA AND ZapA DURING DIVISION RING FORMATION IN *BACILLUS SUBTILIS*

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Division in bacteria begins with the formation of a protein ring at midcell position. This ring is called the Z-ring, since it is formed by FtsZ, a prokaryotic homolog of tubulin. Formation of the Z-ring in *B. subtilis* is assisted by two division proteins, FtsA and ZapA. Previous work by our laboratory showed that ZapA is not essential for Z-ring formation, suggesting that other FtsZ-binding proteins, such as FtsA, would be capable of compensating for the absence of ZapA. In this work, we have compared the division phenotype of an *in frame ftsA* deletion strain with the double mutant *ftsA, zapA* by fluorescence microscopy. We have found that, as previously reported *ftsA* mutation caused filamentation. Furthermore, this filamentation was increased in the double mutant *ftsA, zapA* indicating that indeed ZapA and FtsA have redundant roles in Z-ring stabilization. In an attempt to better understand control of Z-ring formation, we also tested whether the interaction between FtsZ and ZapA was regulated during the bacterial cell cycle. To do this, we created a strain expressing FtsZ fused with a red-fluorescent protein (mCherry) combined with ZapA fused with GFP. Colocalization of FtsZ and ZapA in a population of replicating cells revealed that the two proteins interacted throughout the cell cycle. Similar colocalization studies are currently being carried out for other proteins known to regulate Z-ring formation.

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