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THE IMPACT OF FATTY ACID SYNTHESIS ON CELL SIZE IN *BACILLUS SUBTILIS*

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Nutrient availability has a significant impact on bacterial cell size. Generally, bacteria cultured in nutrient-rich environments grow bigger than those cultured in nutrient-poor environments. However, it is unclear whether cell size is determined by specific biosynthetic pathways, or by bacterial biosynthetic capacity as a whole. Previous studies in the Levin Laboratory identified fatty acid synthesis as the major biosynthetic determinant of cell size in *Escherichia coli*, a Gram-negative model bacterium. Here we examined the impact of fatty acid synthesis on cell size in the Gram-positive bacterium *Bacillus subtilis*. We found that significant reductions in fatty acid synthesis reduce the size of *B. subtilis* cells. However, fatty acid synthesis is not the only major contributor to *B. subtilis* cell size. Further investigation of factors including the small molecule (p)ppGpp, a global inhibitor of biosynthesis, is still needed for a better understanding of cell size regulation in *B. subtilis*.