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Evolution of the Min Protein Oscillation in *E. coli* Bacteria During Cell Growth and Division

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Cell division is a key step in the life of a bacterium. This process is carefully controlled and regulated so that the cellular machinery is equally partitioned into two daughter cells of equal size. In *E. coli*, this is accomplished, in part, by the Min protein system, in which Min proteins oscillate along the long axis of the rod-shaped cells. We have used high magnification, time-resolved fluorescence microscopy to characterize in detail the oscillation in *E. coli* cells in which the MinD proteins are tagged with green fluorescent protein (GFP). We have used a microfluidic device to confine the bacteria into microchannels that allows us to track the evolution of the oscillation in cells as they grow and divide in LB growth media. In particular, we have tracked the loss of synchrony between the oscillations in the daughter cells following cell division.

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