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Modeling of the Effect of Dynamical Changes of Cell Geometry on MinCDE Oscillations During Cell Division in *E. coli*. JASON ELLIS, DIANE STROUP, MICHAEL LEE, Kent State University — In the process of cell division in *E. coli*, spatio-temporal oscillations of the MinCDE proteins act to determine the specific site of FtsZ-ring formation which initiates the process of cell separation. The reaction diffusion processes which drive the biochemical oscillations of the MinCDE system have been studied and we have developed a model which incorporates the dynamics of these oscillations while cell division is accomplished through the formation of the peptidoglycan wall at the location of the FtsZ-ring. This model investigates the mechanisms that cause observed protein segregation in the daughter cells as well as the changes in oscillation characteristics observed between early and late stages of cell growth. Simulations of this model are carried out in space and time based on the reaction diffusion dynamics of individual proteins. The model allows the investigation of effects of cell geometry for both the normal cylindrical rod geometry; as well other hypothetical geometries not easily accessible in laboratory cultures.

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