

Abstract Submitted
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The Spatial-Temporal Evolution of the Interface Between Growing *E. coli* Colonies¹ UE-YU PEN, DAN SIGAL, WILLIAM RYU, University of Toronto — An *Escherichia coli* colony is a popular model used to study the physical interactions of a multicellular system. However, the development of the interface between two interacting colonies has not been well studied. In this work, we tracked the development and interaction of two cellular colonies formed from single founder cells. We observed that the colony-colony interface exhibited a range of roughening, sometimes producing a linear interface (zero roughening) and other times producing a highly sinuous interface (increased roughening). Using time-lapse microscopy, we captured images of a number of interacting colonies and quantified the evolution of their interface and show that it is highly correlated with a number of factors such as colony distance, growth rate, and age. To connect the microscopic details of the spatial orientation of cells to the macroscopic roughening, we simulated growing colonies and found that the orientation of the cells at the interface plays an important role in the roughening of the interface. Initially cells are highly aligned along the interface, but as time progresses, the cell alignment becomes more anisotropic, and it is the level of anisotropy that is highly correlated with the interface roughening.

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