Abstract Submitted
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Modeling Transformation and Conjugation in Bacteria Populations[1] JOHN RUSSO, J.J. DONG, Bucknell University — The rise of antibiotic resistance in bacteria populations is a growing threat to medical treatment of diseases. Transformation, where a cell absorbs a plasmid from its environment, and conjugation, direct transfer of a plasmid from one cell to another, are the two main mechanisms of emergence of antibiotic resistance. We model the processes using a combined approach of Kinetic Monte Carlo simulation and differential equations to describe the plasmid-carrying and plasmid-free populations. Through analysis of our results, we characterize the conditions that lead to dominance of the antibiotic resistant population.

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