

Poster Session Abstract  
Simulation Bacterial Conjugation With Swarm  
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Bacterial conjugation is a process of horizontal gene transfer in certain types of bacteria. A small ring of DNA, called a plasmid, exists in these bacteria and can express some genetic trait, such as antibiotic resistance. If a donor bacteria (one possessing a plasmid and capable of passing it on) comes into physical contact with a recipient bacteria (a bacteria capable of receiving the plasmid that has not yet done so) it is possible that a link between the two bacteria will be created and the plasmid will duplicated itself and spread to the recipient bacteria. Interestingly, donor and recipient bacteria need not be of the same species for this to occur.

Y. Wu (2002), the conjugation rate of bacteria was modeled by fitting established conjugation models to experimental data. This project modeled this process from the bottom up using swarm and the rate constants determined in the mathematical modeling. The resulting simulation populations were compared against the data from the experiments for verification.

#### Citations

Wu, Yungfang, Bacterial Conjugation Kinetics, Purdue University, 2002.