

Meeting: 1006, Lubbock, Texas, SS 10A, Special Session on Extinction, Periodicity, and Chaos in Population and Epidemic Models

1006-92-53 **hal l smith*** (halsmith@asu.edu), dept. math & stat, arizona state university, tempe, AZ 85287,
and **Don Jones** and **Mudassar Imran**. *A Mathematical Model of Gene Transfer in a Biofilm.*

Can a conjugative plasmid encoding enhanced biofilm forming abilities for its bacterial host facilitate the persistence of the plasmid in a bacterial population despite conferring diminished growth rate and segregative plasmid loss on its bearers? We construct a mathematical model in a chemostat and in a plug flow environment to answer this question. Explicit conditions for an affirmative answer are derived. Numerical simulations support the conclusion. (Received January 30, 2005)