1086-VG-2069   **Mark E Whidden*** (`mwhidden@math.fsu.edu`), 1017 Academic Way, Love Building, Room 208, Tallahassee, FL 32303. *Numerical Simulations of a Multiphase Model for Biofilm Development.*

In recent years, many biological phenomena involving complex mechanical and biochemical interactions of multiple components have been successfully modeled using a multiphase framework, including tumorigenesis, gel swelling kinetics, and developmental processes. We construct a multiphase model which captures the spatial patterning of the biofilm formation that occurs in Pierce's Disease, as observed in particular microfluidic experiments. However, the resulting nonlinear, coupled PDE system demands numerical simulations to study its evolution. In this talk, I will examine the computational issues for the numerical simulation of this development of a biofilm, and demonstrate some particular schemes which are both efficient and robust. (Received September 24, 2012)