1116-VC-2871 **Barrett James Anderies*** (banderie@asu.edu), **Erica Rutter** (erutter1@asu.edu), **Eric Kostelich** (kostelich@asu.edu) and **Yang Kuang** (kuang@asu.edu). *Computational Modeling of Murine GL261 Brain Tumors.* Preliminary report.

Glioblastoma Multiforme (GBM) is an aggressive and deadly form of brain cancer with a median survival of approximately one year with treatment. Treatment is informed by MR and CT images acquired at diagnosis, however, treatment seldom results in a significant increase in longevity, partly due to the lack of precise information available to physicians. This lack of information arises from the physical limitations of MR and CT imaging coupled with the diffusive nature of glioblastoma tumors. The imaging information is most incomplete at the edge of the tumor where the density of GBM cells is too low to be resolved. We consider a model of tumor growth based on the reaction-diffusion PDE to better predict tumor growth:

$$\frac{\partial u}{\partial t} = \nabla \cdot (D \nabla u) + \rho u (1 - \frac{u}{K})$$

We consider both stochastic and non-stochastic parameterizations of this model, and use an error minimization (based on the Jaccard distance) algorithm to find optimal parameter values. The model is optimized on data from an animal model of GBM (GL261 tumors in immunocompetent mice). Initial results show that our model adequately predicts tumor growth for short time periods, but struggles to capture some of the long term growth behavior of certain tumor cases. (Received September 22, 2015)