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*Computational Modeling of Murine GL261 Brain Tumors .*

We consider stochastic parameterizations of a diffusion–logistic growth model suggested by Swanson and Murray:

$$\frac{\partial u}{\partial t} = \nabla \cdot (D \nabla u) + \alpha u(p - u)$$

An Ornstein-Uhlenbeck process was used to generate stochastic values for  $D$  and  $\alpha$ . Ensemble simulations were run with varying stochastic parameters and initial conditions. The results of each ensemble were used to generate an average tumor for the set of parameters and initial conditions.

These simulations were compared to T2 weighted MRI data from a Murine in vivo brain tumor experiment. Immunocompetent mice had GL261 tumor cells injected into their brain tissue, and the progression of tumor growth was monitored for a twenty-five day period. Our simulation tumor volumes were within  $0.5 \text{ mm}^3$  of observed volumes, and tumor cell distribution matched closely with observed T2 weighted MRI data. (Received September 15, 2014)