

1058-35-35

Yangjin Kim* (yangjink@umd.umich.edu), Department of Mathematics & Statistics, 2078 CASL Building, 4901 Evergreen Road, Dearborn, MI 48128, **Avner Friedman** (afriedman@math.ohio-state.edu), Jennings Hall, 3rd Floor, 1735 Neil Avenue, Columbus, OH 43210, **Sean Lawler** (Sean.Lawler@osumc.edu), Department of Neurological Surgery, Columbus, OH 43210, **Michal Nowicki** (Michal.Nowicki@osumc.edu), Department of Neurological Surgery, Columbus, OH 43210, and **E. Antonio Chiocca**, Department of Neurological Surgery, Columbus, OH 43210. *Pattern formation of glioma cells (brain tumor) outside the tumor spheroid core.*

Glioblastoma is a highly invasive brain tumor. This invasive behavior is responsible for low survival rate and microenvironment plays an important role in this active migration. We developed a mathematical model to better understand the role of microenvironment in creating different invasion patterns. We analyze the migration patterns of glioma cells from the main tumor, and show that the various patterns observed in experiments can be obtained by a model's simulations, by choosing appropriate values for some of the model parameters (chemotaxis, haptotaxis, and adhesion) of the PDE model. A multi-scale model will also be presented in order to get more detailed information on cell migration. (Received January 08, 2010)