

1064-92-36

Yangjin Kim* (yangjink@umd.umich.edu), 2078 CASL Building, 4901 Evergreen Road, Dearborn, MI 48128, **Hans G. Othmer** (othmer@math.umn.edu), 270A Vincent Hall, 206 Church St. SE, Minneapolis, MN 55455, and **Magdalena A. Stolarska** (mastolarska@stthomas.edu), 2115 Summit Avenue, Saint Paul, MN 55105. *A multi-scale mathematical model of tumor-microenvironment interactions.*

Mathematical modeling holds great promise for medicine to predict tumor growth and therapeutic drug response. Fibroblasts and myofibroblasts near the tumor microenvironment are important players in tumor growth and metastasis because of their unique ability to coordinate events which increase cell proliferation especially in breast cancer. It has been experimentally shown that fibroblasts play an important role in promoting tumor growth in vitro. A multi-scale model of this interaction between stroma and transformed epithelial cells near breast duct will be presented. EGF-TGFbeta signal pathway controls these interactions and our multi-scale model describes these phenomena at different time and spatial time scales, i.e., intracellular dynamics, cell dynamics at cellular level, and mechanical interaction between tumor cells and stromal tissue (continuum). (Received August 16, 2010)