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Andrew Lewis Matteson* (drew.matteson@gmail.com), P.O. Box 7961, College Station, TX 77844. *A mathematical model of tumor angiogenesis, equilibria and stability in the one and two dimensional cases.* Preliminary report.

Angiogenesis is the formation of new capillaries from those already existing. It occurs in wound healing and other biological processes. Of interest to the study of tumor development, angiogenesis is initiated when a solid tumor reaches a certain limiting size.

We develop a mathematical model based on reinforced random walks incorporating effects of vascular endothelial growth factor (VEGF), angiopoietins one and two (ang-1 -2), and alcohol on endothelial cells. We use the model to analyze the effects of alcohol on endothelial cell concentration in a region around the tumor.

We employ techniques of homogenous and non-homogenous perturbation to analyze the stability of the one and two dimensional equilibria. (Received September 28, 2005)