1077-92-2522   **Alicia Prieto-Langarica*** (`alicia.prietolangarica@mavs.uta.edu`), 411 S. Nedderman Drive, 478 Pickard Hall, Arlington, TX 76019, and **Hristo Kojouharov** and **Benito Chen-Charpentier**. *Discrete and Continuous Approaches to Modeling of Cell Movement in the Presence of a Foreign Stimulus.*

Cell movement is a complex process. Cells can move in response to foreign stimulus, in search of nutrients or to escape predation. However, cells do not follow stimulus exclusively but in general admit a random component. Mathematical modeling of cell movement is needed to aid in the deeper understanding of vital processes such as embryogenesis, angiogenesis, tumor metastasis and immune reactions to foreign bodies. In this work we consider cell movement that can be split into two parts: one part is random and another part directed in response to the stimulus. In order to model the random nature of cell movement, an individually based model is created to simulate cells moving in the presence of a heterogenous distribution of stimulus molecules. The model is then upscaled, starting from nalysis of the transition probabilities of individuals at each site, to obtain a continuous partial differential equation model. Finally, the models are compared to each other for different parameter values. (Received September 22, 2011)