1064-92-136 **Evgeniy Khain*** (khain@oakland.edu), 2200 N. Squirrel Road, Oakland University, Rochester, MI 48309. *Migration and clustering of glioma cells.*

We investigate clustering of malignant glioma cells [1]. In vitro experiments in collagen gels identified a cell line that formed clusters in a region of low cell density, whereas a very similar cell line (which lacks an important mutation) did not cluster significantly [2,3]. We hypothesize that the mutation affects the strength of cell-cell adhesion. We investigate this effect in a new experiment [1], which follows the clustering dynamics of glioma cells on a surface. We interpret our results in terms of a stochastic model and identify two mechanisms of clustering. First, there is a critical value of the strength of adhesion; above the threshold, large clusters grow from a homogeneous suspension of cells; below it, the system remains homogeneous, similarly to the ordinary phase separation. Second, when cells form a cluster, we have evidence that they increase their proliferation rate. We have successfully reproduced the experimental findings [1] and found that both mechanisms are crucial for cluster formation and growth.

[1]. E. Khain et al, EPL 88, 28006 (2009). [2]. E. Khain and L.M. Sander, Phys. Rev. Lett. 96, 188103 (2006). [3]. A. M. Stein et al, Biophys. J. 92, 356 (2007). (Received September 03, 2010)