

## **ABSTRACT**

Computational biology has become closely tied to experimental research.

Extra Cellular matrix (ECM) is the another major factor modulating the progress of cancer through different signaling pathways including integrin and growth factors.

Also, role of ECM proteolysis by cell and cell motility which is one of the central cellular processes in cancer progression, in controlling cellular heterogeneity in tumor is also not known. To improve our understanding of these aspects, we have developed a cell based model using Cellular Automata framework by integrating the hierarchical model of CSC cell division with explicit model of tumor ECM and associated processes.

Results demonstrate a strong role of ECM confinement in regulating the CSC mediated tumor development and heterogeneity within such tumor, tumor cells must acquire high motility and proteolysis to circumvent the ECM confinement.