JSS MAHAVIDYAPEETHA

**SRI JAYACHAMARAJENDRA COLLEGE OF ENGINEERING**

MYSORE - 570006

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING



Synopsis On

**Computational model of cancer stem cell dynamics**

Submitted by

Rahul Kulkarni

(USN: 4JC13SCE12) in partial fulfillment for the award of Masters of Technology (MTech) in Computer Engineering Carried out at Indian Institute of Technology Bombay

|  |  |
| --- | --- |
| **Internal Guide**  Dr. ANASUYA M.A.  Assistant Professor,  Department of Computer Science and Engineering, SJCE, Mysore. | **External Guide**  Dr. SHAMIK SEN  Assistant Professor,  Department of Biosciences and Bioengineering, IIT Bombay, Mumbai. |

****

**Affiliated to**

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY**

**BELGAUM**

**1. Introduction**

Cancer stem cells (CSCs) are special type of cells which have been shown to associate with different aggressive cancer phenotypes including drug resistance. CSCs are transformed cancer cells possessing the properties similar to stem cells. In this project, we want to develop a computational model based on the available experimental data to gain further insights about the origin of CSCs and their role in promoting cancer. The computational model will be developed by combining discrete and continuous modeling approaches. The model will integrate the cell evolution cycle related to CSC and effects of microenvironmental parameters on this cycle. Computational predictions will be experimentally tested by PhD students in the lab.

**2. Expected outcomes of the project**

Successful completion of the problem will contribute to our understanding of how CSCs contribute to cancer invasiveness.

**3. Possible learning outcomes for the interns**

How to develop computational models for getting insights into biological problems.