

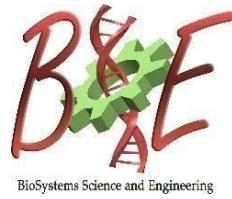


Indian Institute of Science

Centre for BioSystems Science and Engineering

BSSE Seminar

17th February 2020, 4:00PM, Monday, MRDG Seminar Hall, 1st floor,
Biological Sciences Building

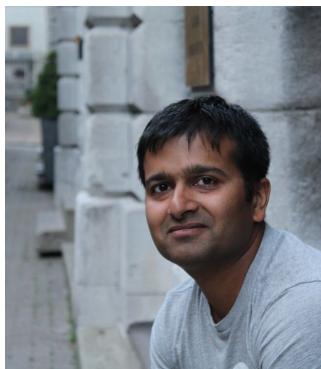


BioSystems Science and Engineering

The Stag Hunt Game in Cancer: How Cells Cooperate Within Cancer Populations and Stroma to Divide and Conquer

Dr. Kshitiz Gupta
University of Connecticut

ABOUT THE SPEAKER



Kshitiz is an Assistant Professor at the University of Connecticut Health, and an Investigator at the National Cancer Institute Yale Cancer Systems Biology Center. His scientific interests include hypoxia, cell-cell communication, mechanobiology, and systems biology. He is also a writer, a published poet, and a classical dancer.

ABSTRACT

Cancer populations, even isogenic ones, undergo role specification during stromal invasion. A typical invading fork of a tumor is led by a migratory leader cells, followed by a rapidly dividing mass of cells. Most tumors exist in hypoxic environments, but paradoxically continue to proliferate, and exhibit metastatic behavior. How do individual cancer cells cooperate to facilitate the emergence of a collective phenotype that facilitates a desired outcome in stress conditions like hypoxia? The first suspect is intercellular communication, but it is not understood how stratification of roles might emerge, particularly when such cooperation would require a subset of cells to make sacrifices. In this talk, we will show how hypoxic cancer cells can undergo quorum sensing to facilitate the emergence of phenotypic heterogeneity within the population. In addition, the talk will also present on another mode of communication, between cancer and stroma, and the evolutionary understanding of why tumors become invasive in primates, including humans.