Indian Institute of Science

Centre for BioSystems Science and Engineering

# BSSE Seminar

**At 2:00 PM on 28th January 2019**

**MRDG seminar hall, 1st Floor, Biological Sciences Building**

## Mechanobiology of Collective Cell Dynamics: Cells in the Epithelium

**Speaker: Prof. Tamal Das**

**Affiliation: TIFR Hyderabad**

## Abstract

Collective cell dynamics refers to the process of many cells acting as a cohesive group, with each individual adjusting and synchronizing its dynamics with that of its neighbours. Many important physiological processes, including embryonic development, organogenesis, regeneration, and wound healing require tens of cells to coordinate their actions in such a way that they essentially act as a single entity or a collective. However, the governing rules underlying many of these collective processes remain elusive. To this end, in search for a set of general principles and systematic behaviours, which may be rather simple, we are resorting to a physicist's approach and asking how mechanical forces exerted at cell-cell and cell-matrix junctions influence the cellular dynamics at collective length-scale. In our group, we specifically aim to reveal the underlying biophysical dynamics as well as the molecular mechanisms that enable the cell collectives to coordinate their movements, to orchestrate their decision to proliferate, and to execute the removal of a mutated and potentially oncogenic population.

## About the Speaker

Prof. Tamal Das finished his dual degree, i.e. combined B.Tech and M.Tech, from the Department of Biotechnology at IIT Kharagpur in 2006. He then pursued his doctoral research on Bio-microfluidics in the Microfluidics lab at IIT Kharagpur till late 2010. After having a short stint of postdoc at the Institute for Cancer in Montreal, Tamal joined Prof. Joachim Spatz's department at the Max Planck Institute for Intelligent Systems (Stuttgart, Germany) in 2011, where he started working on the collective dynamics of epithelial cells. In October 2016, Tamal moved to TIFR Hyderabad and started his own group. His primary areas of interest are mechanobiology, collective cell dynamics, and microfluidics.