

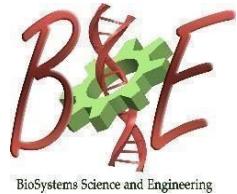


Indian Institute of Science

Centre for BioSystems Science and Engineering

BSSE Seminar

16th December 2019 (Monday), 4:00 PM, MRDG Seminar Hall, 1st floor,
Biological Sciences Building



BioSystems Science and Engineering

Multiscale Modelling of Cancer Progression and Treatment Responses

Dr. Gibin G. Powathil
Swansea University, UK

ABOUT THE SPEAKER



Dr. Gibin G. Powathil is an Associate Professor in the Department of Mathematics at Swansea University, in the United Kingdom. Prior to joining Swansea as a Senior Lecturer in 2014, he did a postdoctoral fellowship at the University of Dundee, UK. He received his Ph.D. in Applied Mathematics from the University of Waterloo, Canada for his research on mathematical modelling of brain tumours. He has also received an M.S. degree in Computational Mathematics from National University of Singapore and M.Sc. in Mathematics from Indian Institute of Technology, Madras. His primary research interests are in Mathematical Medicine and Mathematical Oncology. In particular, he is interested in multiscale mathematical modelling of cancer and associated therapies, which will eventually help towards Model Assisted Personalised Medicine.

ABSTRACT

In this talk, I will present a validated hybrid individual cell-based mathematical and computational model, incorporating single-cell based intracellular dynamics, the cell microenvironment and cell-cell interactions to study the growth and progression of cancer cell mass. The model will then be used to study the effects of multiple treatments such as radiation and chemotherapy. In particular, we will study the direct and indirect responses (bystander effects) of radiation therapy and further, analyse the role of cell-cycle-based tumour heterogeneity in inducing chemotherapeutic drug resistance.