Indian Institute of Science
Centre for BioSystems Science and Engineering
BSSE Seminar

20th December 2019 (Friday), 4:00 PM, MRDG Seminar Hall, 1st floor, Biological Sciences Building

Reconstituting Eukaryotic Cytokinesis

Dr. Mohan Balasubramanian
University of Warwick, U.K

ABOUT THE SPEAKER

Mohan Balasubramanian read Chemistry as an undergraduate in Madras Christian College and Biotechnology as a post-graduate in MS University of Baroda. He carried out his PhD in Microbiology at the University of Saskatchewan when he discovered a contractile division apparatus in fission yeast containing actin regulatory proteins. Following post-doctoral work at Vanderbilt University, during which time he furthered his work on cytokinesis, he established his independent research group at the National University of Singapore in 1997. He held various administrative positions in Singapore between 2000 and 2012, before moving to the University of Warwick, UK in 2013. He is currently Professor and Pro-Dean Research of the Warwick Medical School. He is the winner of the National Science medal Singapore in 2008. His research is funded by the Wellcome Trust, ERC, and the BBSRC.

ABSTRACT

Cytokinesis in many eukaryotes involves the function of an actomyosin based contractile ring. Over the years, the fission yeast has emerged as an excellent organism for the study of eukaryotic cytokinesis regulatory mechanisms. I will discuss the work carried out in my group on assembly and contraction of the actomyosin contractile ring. I will discuss a combination of methods involving genetics, advanced imaging, and reconstitution to understand actomyosin ring assembly. I present evidence for the assembly in vitro of a contraction competent actomyosin ring with only five components. I will also describe our work on cytokinetic ring contraction using an approach in which we have isolated cytokinetic rings that are contraction-competent in vitro. We believe the combination of the approaches we use will distinguish molecules necessary for cytokinesis from those sufficient for cytokinesis.