SEMINAR

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TEMASEK LIFESCIENCES LABORATORY

28 August 2018 (Tuesday), 3.30pm

The Auditorium (Level 1)

Hosted by: Dr Naweed Naqvi

Structural and functional determinants of fungal centromeres

Dr Kaustuv Sanyal
Jawaharlal Nehru Centre for Advanced Scientific Research, India



The process of centromere formation is intriguing since it helps to propagate critical information from the previous generation to reuse it for future episodes of chromosome segregation. In spite of performing the conserved function of chromosome segregation, centromeres are known to be evolving rapidly in all forms of life. We cloned and characterized centromeres of a number of close as well as distant species of pathogenic fungi. Based on these studies, we conclude that organisms with a more compact genome tend to have a shorter centromere. We also find that RNAi plays a major role in determining the length of repeat-associated fungal centromere. Finally we provide evidence that crosstalk between DNA replication and chromosome segregation machinery acts as an epigenetic determinant of centromere location in fungi.

Kaustuv Sanyal obtained Masters of Science in Biotechnology from Madurai Kamaraj University, the PhD degree from Bose Institute (Kolkata) and a postdoctoral fellowship at the University of California, Santa Barbara, USA. He joined JNCASR, Bangalore in late 2005 and is professor in Molecular Biology and Genetics Unit. Since his graduate studies, the major focus of his research is to understand the mechanism of chromosome segregation using various yeasts, both pathogenic and non-pathogenic, as model systems. He has contributed significantly in his research area by publishing several papers and reviews. He has been invited in many international meetings as a session chair, plenary speaker, mentor, guest lecturer or for delivering research seminars. He has been awarded the prestigious Tata Innovation Fellowship and National Bioscience Award by the Department of Biotechnology (India), is an elected fellow of the Indian National Science Academy (New Delhi), Indian Academy of Sciences (Bangalore, India) National Academy of Sciences (Allahabad, India) and a member of the Faculty of 1000 (F1000Prime), UK. Currently, he leads a group of 17 members consisting of graduate students and postdoctoral researchers and actively collaborates with many research groups across the world.

Recent Publications:

1. Vikas Yadav, Sheng Sun, R. Blake Billmyre, Bhagya C Thimmappa, Terrance Shea , Robert Linter , Guss Bakkeren, Christina Cuomo, Joseph Heitman , **Kaustuv Sanyal (2018)** RNAI is a critical determinant of centromere evolution in closely related fungi. ***PNAS*** 115: 3108 – 3113
2. Sheng Sun, Vikas Yadav, R. Blake Billmyre, Christina A. Cuomo, Minou Nowrousian, Liuyang Wang, Jean-Luc Souciet, Teun Boekhout, Betina Porcel, Patrick Wincker, Joshua A. Granek, **Kaustuv Sanyal**, and Joseph Heitman **(2017)** Fungal genome and mating system transitions facilitated by chromosomal translocations involving intercentromeric recombination. ***PLOS Biology*** 15: e2002527
3. Gautam Chatterjee, Sundar Ram Sankaranarayanan, Yogitha Thattikota, Krishnendu Guin, Sreedevi Padmanabhan, Rahul Siddharthan, and **Kaustuv Sanyal (2016)** Repeat associated fission yeast-like centromeres in the budding yeast *Candida tropicalis*, a human pathogen. ***PLOS Genetics*** 12: e1005839