TIFR Centre for Interdisciplinary Sciences
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Seminar

Vertebrate heart development: Lessons learnt from live imaging

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Embryogenesis creates complex biological forms out of simpler structures. Herein cells and tissues undergo dynamic changes in pattern and form employing a wider range of physical mechanisms than at any other time during an organism's life. Live optical imaging has the unique advantage of watching biological circuits function over different length and time scales in the context of an intact organism. To observe these events, one requires employing different imaging techniques. Sub-cellular resolution imaging of beating zebrafish heart has however remained a challenge owing to the organ's dynamic nature. Embryonic heart is a 100-micron length scale 3D structure, moving quasi-periodically at few Hertz frequency, over tens of microns amplitude while continuously transforming from a linear tube to a 2 chambered organ over a period of 2 days. In this talk I will outline our efforts to develop 2-photon light sheet microscopy and use point-scanning imaging to address different aspects of cardiac development. This work has enabled us to decipher previously unappreciated interplay between cellular physical properties and the genetic program guiding the development of vertebrate heart.

Thursday, Sep 18th 2014

11:30 AM (Tea/Coffee at 11:15 AM)

Seminar Hall, TCIS