TIFR Centre for Interdisciplinary Sciences
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Seminar

Active torque generation by the actomyosin cell cortex drives left-right symmetry breaking

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Many developmental processes break left-right (LR) symmetry with a consistent handedness. This symmetry breaking requires a chiral process and in many species the primary determinant of this asymmetry has been linked to the cytoskeleton. However, the nature of the underlying chirally asymmetric cytoskeletal processes has remained elusive. By combining thin-film active chiral fluid theory with experimental analysis of the C. elegans embryo, we show that the actomyosin cortex generates active chiral torques to break the symmetry along LR axis. Our results uncover a novel, large-scale physical activity of the actomyosin cytoskeleton that provides a fundamental mechanism for chiral morphogenesis in development.

Tuesday, Mar 17th 2015

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

Seminar Hall, TCIS