

ICTS Seminar

- Title** : Emergence of a bilaterally symmetric body plan during zebrafish embryogenesis
- Speaker** : Sundar R. Naganathan, Ecole Polytechnique Federale de Lausanne, Switzerland
- Date** : Tuesday, September 4, 2018
- Time** : 11:00 AM
- Venue** : Amal Raychaudhuri Meeting Room, ICTS Campus, Bangalore
- Abstract** : How does a left-right (LR) symmetric body plan emerge during embryonic development in vertebrates? LR symmetry in embryos is first observed during a process called somitogenesis, where the body axis is periodically segmented into epithelial blocks known as somites. Somites, which give rise to the musculoskeletal system, form bilaterally on either side of a tissue called the notochord. The size, shape and anteroposterior position of bilateral somites need to be symmetric across the notochord to ensure a LR symmetric musculoskeletal system. However, it is unknown how this precise coordination is achieved between the left and right sides during embryonic development. Using light-sheet microscopy and advanced image analysis algorithms, I am quantifying somite physical properties in zebrafish embryos over time. We observe that many bilateral somite pairs form in an asymmetric fashion. Interestingly, we find that these asymmetries are transient and get resolved over time, suggesting that the embryo performs error correction. Uncovering the biophysical mechanisms that correct these errors would be key towards understanding the emergence of body form symmetry, which is fundamental to vertebrate development.