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Identification and Annotation of Long Non-Coding RNA in Myogenesis

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Our understanding of genome regulation is ever evolving with the continuous discovery of the new mode of gene regulation. Transcriptomic studies of mammalian genomes have recently revealed the presence of an extremely large population of non-coding RNA molecules in the transcripts expressed in cells. One such non-coding RNA molecule is the long non-coding RNA (lncRNA). This new class of gene is recently identified in various tissues. The function of the lncRNAs in gene regulation is not well understood. ENCODE project has annotated thousands of lncRNA in various cells. Studies are yet to be carried for functional annotation of these lncRNAs. Many recent studies have, however, showed the evidence of lncRNAs playing important role in normal physiology and in many diseases, such as X-chromosomal dosage compensation, embryonic stem cell maintenance, differentiation and development, antiviral response, gene imprinting, cancer progression and vernalization in plants. In this present study, we have identified the lncRNAs and determined their role in the developmental process. The function of these lncRNAs was determined by correlating these lncRNAs with other epigenetic marks, such as histone modifications. We have selected the process of myogenesis as a study case, where we have identified lncRNAs in mouse and human and annotated them based on their association with the genes in their vicinity. With this study, we have identified few novel lncRNAs in myogenesis and annotated them. In this analysis we have discovered few lncRNAs in myogenesis which has a role in muscle development, chromatin modifications, etc. and were not reported earlier.

Biography:

Dr. Soumyadeep Nandi pursued his M.Sc from Gauhati University in Zoology with specialization in Cell Biology. He did his Ph.D. from Jawaharlal Nehru University in Computational Biology. In his Ph.D. research, he was mainly involved in characterizing proteins function by developing and implementing different protein classification techniques. His first postdoc was at Ottawa Institute of Systems Biology, Faculty of Medicine and University of Ottawa, Ontario, Canada. His second postdoc was at Molecular Biology Department, Umeå University, Sweden. Currently, he is working as a Ramalingaswami Fellow at the IASST, Guwahati. Research in his group includes sequence analysis, correlation studies of epigenetic factors, developing computational tools.

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