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Departmental Seminar

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Seminar Title	: Single Nucleotide Polymorphism Role in Modifying the Structure and Function of Long Noncoding RNAs
Speaker	: Mandakini Singh (Roll No: 5201s2006)
Supervisor	: Santosh Kumar #2787
Venue	: LS Seminar Hall
Date and Time	: 31 Dec 2024 (16:00 hrs)
Abstract	: Single nucleotide polymorphism (SNP) is a kind of genetic mutation in which single nucleotide is substituted at the specific position in the genome. From the report of Genome-wide association studies, most of the SNPs are present in the noncoding region of the genome from many long noncoding RNAs (lncRNAs) emerge. These RNAs cover a larger fraction of the genome. They perform most of their regulatory functions by interacting with RNA Binding Proteins (RBPs). Recent studies on them suggest that lncRNA are inevitable for the functioning of the cellular transcriptome. Transcription of lncRNA harbouring SNP may bring about numerous detrimental diseases. This makes the SNP study crucial to decipher the possible mechanism behind the association among SNP, lncRNA, and RBP. In our study, the impact of SNP was investigated on the lncRNA configuration. Apart from that, SNP-induced RNA-RBP remodelling was also studied. From in silico work, SNP-induced structural alterations are found in the lncRNA, which are validated by RNA structure prediction software such as RNA structure, RNAfold, and Centroidfold. RBPs interacting with lncRNAs were obtained by analyzing the published data acquired from the Encyclopedia of RNA Elements (ENCORE). From molecular docking, they are found to be associated with the remodelling of RNA-RBP interaction. This ultimately affects the functions performed by lncRNAs. Hence, the interconnection among SNP, lncRNA and RBP is essential to understand the underlying cellular mechanism of disease pathogenesis. Keywords: ENCORE, lncRNA, RBP, RNAstructure, SNP