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Structure-Function of U11 snRNA in the Minor Splicing Pathway

Mark P. Biro
Cleveland State University, M.P.BIRO@csuohio.edu

Jagjit Singh
Cleveland State University, J.SINGH104@csuohio.edu

Structure-Function of U11 snRNA in the minor splicing pathway

College of Sciences and Health Professions

Department of Biological, Geological, and Environmental Sciences

Student Researchers: Mark Biro; Jagjit Singh

Faculty Advisor: Girish C Shukla, Ph.D.

Abstract

In human, the majority of protein coding genes are interrupted by dispensable intervening sequences (introns). These introns are removed by nuclear precursor (pre) mRNA splicing process to produce a mature mRNA needed for productive protein production in the cell. We are studying the splicing of minor class or U12-type introns which are spliced by U11, U12, U4atac, U5 and U6atac snRNAs. U11 snRNA binds to the 5' end or splice site of the intron by RNA-RNA base-pairing to initiate the splicing process. U11 snRNA has been predicted to form an intramolecular clover leaf like RNA structure, which is presumably essential for splicing. However, the existence of the proposed structure and its functional implication still not clear. In this study, we have developed an *in vivo* assay to study structure-function of U11 snRNA. Using a first site mutation suppressor assay we have developed second site mutants of U11 snRNA. These mutant snRNAs were tested for their function by activating the splicing of an artificial minigene in cultured mammalian cells. Our results show the functionality of the genetic mutation suppressor assay in establishing the role of U11 snRNA in nuclear pre-mRNA splicing.