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Exploring the Function of SRSF1 RRM1 Domain in Spliceosome

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In eukaryotic cells, the spliceosome plays the pivotal role of determining which segments of pre-mRNA make it to the ribosome to be translated (exons) and which get snipped out during mRNA processing (introns). Many small proteins, known as splicing factors, function to guide the spliceosomal complex in choosing the splice sites at which to excise an intron. One of the more ubiquitous splicing factors is Serine/Arginine-Rich Splicing Factor 1 (SRSF1, a.k.a. ASF1 or SF2), which is made up of two RNA-Recognition Motif (RRM) domains and one Serine/Arginine-Rich (RS) domain. Though it is well established that SRSF1 recruits the spliceosome to the 5' splice sites of introns by means of interaction with the pre-mRNA transcript at the Exonic Splicing Enhancer (ESE) sequence and with the RRM domain of the U1-70K protein of the spliceosome's U1 snRNP, the exact mechanism of binding remains unclear. Here we report that SRSF1's first RRM (RRM1) is capable of binding to both the ESE RNA sequence and the U1-70K separately, with preliminary data suggesting that simultaneous binding to both ESE RNA and U1-70K in the form of ternary complex.