Title:	Evolution of the ubiquitin fold of the intron-specific splicing factor Sde2
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Keywords:	Molecular biology ubiquitin proteins Sde2- An intron specific splicing factor Arabidopsis RNA isolation
Issue Date:	May-2020
Publisher:	IISER Mohali
Abstract:	Sde2 is an intron-specific pre-mRNA splicing regulator that is synthesized as precursor with a N-terminal ubiquitin fold (Sde2-UBL). Despite having a poor similarity (less than 20%) to ubiquitin, this UBL gets processed by the deubiquitinating enzymes (DUBs) Ubp5 and Ubp15 in Schizosaccharomyces pombe. Post-processing, an activated C-terminal domain of Sde2 (Sde2-C) is formed which has been shown to enter the spliceosome and is involved in the pre-mRNA splicing of a specific set of introns in a subset of genes. Unlike ubiquitin, which is a highly conserved protein, Sde2-UBL is poorly conserved across eukaryotic kingdom. Even amongst the species of the same genera like Schizosaccharomyces, the conservation is very poor. The Sde2-UBL is also less conserved than Sde2-C. This study suggest that Sde2-UBL evolved rapidly from ubiquitin, possibly because the ubiquitin–Sde2-C precursor was inhibitory to cell growth. This rapidly evolving molecule nevertheless remained under selection pressure of retaining the ubiquitin fold, for allowing DUB-specific cleavage activating the spliceosomal Sde2-C. We have also shown that the UBL region of Sde2 seems to have evolved faster than the C terminal. We also analyzed the evolutionary phylogeny of Sde2 across different organisms.
URI:	http://hdl.handle.net/123456789/1386
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