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Dept or Program Years in program

Mentor

Can a bacterial group II intron splice in the yeast, *Saccharomyces cerevisiae*?

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Group II introns are catalytic RNAs that can not only self-splice but also invade ectopic locations exploiting the hosts' cellular machinery. These mobile genetic elements exist in all branches of life, except in the nuclear genomes of higher eukaryotes. The latter fact is surprising given the highly mobile nature of group II introns and their striking similarity with the eukaryotic spliceosomal machinery in many mechanistic and structural aspects. Although there are group II introns in yeast mitochondria, there is no evidence of a bacterial group II intron functioning in yeast nuclei. We intend to address this issue by studying the spliceable nature of the *Lactococcus lactis* Ll.LtrB intron in the yeast, *Saccharomyces cerevisiae*. The yeast Cup1 gene, as a reporter has proved invaluable for studying pre-mRNA splicing in yeast. We have constructed a Cup1-based splicing construct that will allow us to monitor the efficiency of Ll.LtrB splicing in vivo. Further, exploiting the known rules for nuclear intron splicing in yeast, we plan on systematically mutating the group II intron in an attempt to recruit the yeast spliceosome. These studies may provide evidence in favor of the origin of the eukaryotic spliceosomal introns from the bacterial group II introns.