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JOURNAL ARTICLE

Expression of crisp-1 mRNA splice variants in the rat epididymis, and comparative analysis of the rat and mouse crisp-1 gene regulatory regions

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The rat Crisp-1 gene encodes Protein DE (acidic epididymal glycoprotein; AEG), a glycoprotein secreted by the epididymal epithelium that associates with maturing sperm and has been implicated in the process of sperm-egg fusion. Previous characterization of the Crisp-1 messenger RNA in the rat epididymis has demonstrated the presence of 3 splice variants (Klemme et at, 1999). This study was undertaken to determine if expression of the Crisp-1 splice variants in the rat epididymis is region-specific and correlates with the region-specific pattern of synthesis of the D and E forms of the Crisp-1 protein. Expression of each of the splice variants was shown by RNase protection assays to be under the control of androgens, but they are not differentially regulated either within the epididymal segments or along the length of the organ. The reported structure of the mouse Crisp-1 gene does not include an exon that is equivalent to the rat exon 1, suggesting that the rat splice variants cannot exist in the mouse and may be specific to the rat. Furthermore, the mouse transcription start site is situated in a different region of the gene than in the rat. In this study, a comparison of the mouse and rat genes in the region flanking the mouse exon 1 and the rat exon 2 (within the rat intron 1) shows greater than 80% sequence identity, including the conservation of several putative androgen receptor binding sites. In addition, the rat gene is shown to have a corrupted TATA box in intron 1 that corresponds to the TATA box located in the mouse gene. These observations explain the preferential transcription for the mouse gene in this region, while the predominant start site for the rat gene is 5' of the upstream exon 1. Although an exon corresponding to the rat exon 1 has not been found in the mouse gene, reverse transcription-polymerase chain reaction experiments using mouse epididymal RNA suggest that such an exon exists in the mouse gene and is transcribed at low frequency.

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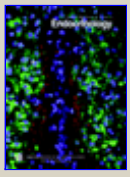

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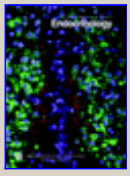

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