

PROMOTER CHARACTERIZATION OF THE TSC1 GENE

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Tuberous sclerosis complex (TSC) is an autosomal dominant disorder with loci on chromosome 9q34 (TSC1) and chromosome 16p13 (TSC2). Genes for both loci have been isolated and characterized. The promoters of both genes have not been characterized so far and little is known about the regulation of these genes. This study reports the characterization of the human *TSC1* promoter region. We have used PCR methodology to isolate approximately 1.6 kb genomic DNA 5' to the *TSC1* cDNA. This sequence has directed a high level of expression of luciferase activity in both HeLa and HepG2 cells. Successive 5' and 3' deletion analysis has suggested that a ~587 bp region, from position +77 to -510 from the TSS (transcription start site), contains the promoter activity. Interestingly, this region contains no consensus TATA box or CAAT box. However, a 521 bp fragment surrounding the TSS exhibits the characteristics of a CpG island which overlaps with the promoter region. Electrophoretic mobility shift assay indicated interaction of the predicted transcription factors binding elements like GC-box, E-box and E2F binding element with the transcription factors, within the core promoter. The identification of the *TSC1* promoter region will help in designing a suitable strategy to identify mutations in this region in patients who do not show any mutations in the coding regions. It will also help to study the regulation of the *TSC1* gene and its role in tumorigenesis.