

ISOLATION AND CHARACTERIZATION OF THE *TSC1* GENE PROMOTER

Mahmood Ali¹, S. C. Girimaji² and Arun Kumar¹

¹*Department of Molecular Reproduction, Development and Genetics, Indian Institute of Science, Bangalore-560012, India.* ²*Department of Psychiatry, National Institute of Mental Health and Neurosciences, Bangalore-560029, India.*

Tuberous sclerosis complex (TSC) is an autosomal dominant disorder with loci on chromosome 9q34 (*TSC1*) and chromosome 16p13.3 (*TSC2*). Genes for both loci have been isolated and characterized. During the present study, we have used the PCR methodology to isolate approximately 1.6 kb of the genomic sequence, 5' to the published *TSC1* cDNA. This sequence directed a high level of luciferase activity in both HeLa and HepG2 cells. Successive 5' and 3' deletion analysis suggested that ~300 bp region, from position -254 to -547 from the published 5' end of the *TSC1* cDNA, contained the promoter activity. Interestingly this region contained no consensus TATA box or CAAT box, but a variant of TATA box (CATAAA) was found at a position -194 from the published 5' end of *TSC1* cDNA. The Sp1 transcription factor binding sequence, GGCGGG, is found at three positions -207, -322 and -341 which is commonly seen in promoters of viral and cellular house keeping genes. In addition, binding sites for several other transcription factors, namely *HNF4*, *MYCMAX*, *WT1*, *AML1* *PAX6*, *FREAC2*, *MZF1*, *GATA3*, *ZBP89* were also found in the promoter region. The identification of the *TSC1* promoter region will help in designing a suitable strategy to identify mutations in this region in patients who did not show any mutations in the coding regions. It will also help to study the mechanism of regulation of *TSC1* gene (Financial assistance from DBT and CSIR is gratefully acknowledged).