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植物诱变育种·农业生物技术

棉花*Bax inhibitor*-1基因启动子的克隆及初步验证

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摘要： 为研究克隆自陆地棉的*GhBI*-1*A*和*GhBI*-1*B*基因的表达差异及其响应不同物生和非生物胁迫的分子机制,利用BD GenomeWalker™ Universal Kit的染色体步移技术得到了2个棉花*GhBI*-1*A*和*GhBI*-1*B*基因5'端上游的启动子序列,长度分别为1650bp和2001bp。生物信息学分析表明,*GhBI*-1*A*和*GhBI*-1*B*的启动子序列均存在TATA-box和CAAT-box及多个与植物非生物胁迫相关的响应元件,*GhBI*-1*B*启动子中还含有真菌诱导应答元件。以表达载体 pBI101为基础, 用所克隆的2个棉花*GhBI*-1基因启动子序列与*GUS*报告基因融合, 构建新的植物表达载体并转入农杆菌。用叶盘法侵染烟草进行瞬时表达,结果表明2个启动子均能够驱动报告基因的表达。

关键词： 棉花 *GhBI*-1基因启动子 克隆 瞬时表达

Cloning and Test of *Bax Inhibitor*-1 Gene Promoters from Upland Cotton (*Gossypium hirsutum* L.)

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Abstract: To investigate the expression scensrio of *Bax inhibitor*-1 (*GhBI*-1*A* and *GhBI*-1*B*) genes cloned from Upland Cotton (*Gossypium hirsutum* L.) and the molecular mechanism of their diverse response to biotic and abiotic stress, the promoter fragments of 1650bp and 2001bp upstream the 5’ end of *GhBI*-1*A* and *GhBI*-1*B* were isolated from the genomic DNA of Upland Cotton by BD GenomeWalker™ Universal Kit technique. Bioinformatics analysis revealed that the two promoter sequences contained basic cis-elements, such as TATA-box and CAAT-box and many elements involved in the plant abiotic stress response. *GhBI*-1*B* also included a Box-W1, which is involved in fungal response. Plant expression vectors were constructed by inserting the two GhBI-1 promoter sequences into the upstream of the GUS gene of the binary vector pBI101, and, transferred into Agrobacterium tumefaciens. The result of transient expression indicated that both sequences had the function to drive reporter gene *GUS* in tobacco.

Keywords: *Gossypium hirsutum* *GhBI*-1 promoters Clone Transient Expression

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