遗传 2006 28 (4): 443-448 ISSN: 0379-4172 CN: 11-5450/R

研究报告

陆地棉*SUPERMAN*类似锌指蛋白基因的克隆与表达分析

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收稿日期 2005-7-21 修回日期 2006-1-16 网络版发布日期 2006-4-7 接受日期

摘要

锌指蛋白是生物体内数量最多的转录调控因子，它在动植物的生长发育中都起到十分重要的作用。*SUPERMAN*类锌指蛋白只含有1个锌指结构。我们根据这类蛋白的保守结构域设计简并引物，通过RT-PCR从棉花中获得了3个这个家族成员的EST，得到1个锌指蛋白基因的全长序列，该基因的编码区长744 bp，编码长248个氨基酸的多肽，其氨基酸序列与GenBank中登录的一个拟南芥RBE蛋白有40%的同源性。此基因被命名为*GZFP*。它含有保守的锌指结构并在多肽链的C-端具有富含亮氨酸的保守结构域，*GZFP*含有核定位信号并且没有内含子。*GZFP*基因在棉花花蕾、子房、花瓣和根中的表达量要高于木质部、韧皮部、叶片、纤维和种子。*GZFP*基因的表达量很低，在GenBank中没有任何和它同源的EST序列存在。对*GZFP* 5′侧翼区进行分析发现有数个花粉和根特异表达相关元件，4个与Dof蛋白作用的核心序列，4个与光诱导相关的元件。

关键词 棉花；锌指蛋白 基因表达

分类号 Q943 S562

Molecular Cloning and Expression Analysis of a *SUPERMAN*-like Zinc Finger Protein Gene in Upland Cotton

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Abstract

The zinc finger proteins belong to the largest family of regulatory transcription factors, which play an important role in growth and development in animal and plant systems. <I>SUPERMAN</I>-like zinc finger protein gene has only one “finger like” motif. A pair of degenerate primers was designed according to the conserved regions, and 3 kinds of EST of this family were isolated from cotton through RT-PCR. The full length of one <I>SUPERMAN</I>-like zinc finger protein also has been acquired. The entire coding region is 744 bp and encodes a polypeptide of 248 amino acids with 40% homology to RBE protein of <I>Arabidopsis</I> deposited in the GenBank. This gene was designated as<I> GZFP</I>. It has the conserved zinc finger domain and the leucine rich region at the carboxyl terminus but no intron in the coding region. <I>GZFP </I>also<I> </I>has the plant nuclear localization signal. <I>GZFP</I> shows a more expression pattern in floral buds, ovaries, petals and roots than in phloem，xylem, fibers, leaves and seeds of cotton by RT-PCR, although it has a very low detection level and there is not any homologous ESTs found in the GenBank. Analysis of the 5’ flanking sequence shows there are several regulatory elements responsible for pollen and root expression, four core sites required for binding of Dof proteins and four light-regulated elements.

Key words upland cotton（*Gossypium hirsutum* L.） zinc finger protein gene expression

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