

拟南芥根生长缺陷突变体*rei1*的分离和鉴定

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Isolation and Characterization of *Arabidopsis rei1* Mutant

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摘要

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摘要 植物体根发育是一个复杂的过程, 尽管对其研究颇多, 但对其中的分子机制尚缺乏足够认识。以模式植物拟南芥(*Arabidopsis thaliana*)为研究材料, 在T-DNA突变体库中分离到一个拟南芥根生长缺陷突变体*rei1*(*root elongation inhibited 1*)。通过表型分析发现, *rei1*在生长发育方面与野生型存在明显的差异, 突变体的根较野生型短, 且角果较小, 花出现部分的败育。对突变体进行显微结构分析, 发现突变体的根在内部结构上表现为表皮及皮层细胞形态不规则, 排列疏松且横向膨大。遗传学分析表明, *rei1*是单基因隐性突变且与一个T-DNA插入共分离, 通过图位克隆的方法成功分离了缺失的候选基因。以上研究结果表明, *REI1*对植物的根发育具有重要的调节作用。

关键词: 拟南芥 图位克隆 *REI1* 根形态

Abstract: Despite much research into the regulation of root system architecture, a complex process, the detailed molecular mechanism is still not clear. We screened and isolated a mutant, *root elongation inhibited 1* (*rei1*), in the T-DNA mutant library, which showed altered root growth and development, such as reduced root and silique growth and defective flower development. Microstructure analysis revealed irregular shape, loose arrangement and horizontal enlargement in the inner structure of the epidermis and cortex cells of mutant roots. Genetic analysis revealed *rei1* as a single recessive- gene mutant and cosegregated with a T-DNA tag; we used map-based cloning to identify the candidate gene. *REI1* may contribute to regulating root growth and development in *Arabidopsis*.

Keywords: *Arabidopsis thaliana* map-based cloning *REI1* root morphology

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