

一种受抗生素诱导的启动子的构建及活性分析

刘伟伟, 张海磊, 刘财丰, 葛晓春*^{*}

复旦大学生命科学院植物研究所生物化学与分子生物学系, 上海 200433

Construction and Activity Analysis of an Antibiotic-inducible Promoter

Weiwei Liu, Hailei Zhang, Caifeng Liu, Xiaochun Ge*^{*}

Department of Biochemistry and Molecular Biology, Institute of Plant Science, School of Life Sciences, Fudan University, Shanghai 200433, China

摘要

参考文献

相关文章

Download: [PDF](#) (624KB) [HTML](#) 1KB Export: [BibTeX](#) or [EndNote](#) (RIS) [Supporting Info](#)

摘要 多聚ADP核糖聚合酶(PARP)受基因毒剂的特异性诱导。将拟南芥(*Arabidopsis thaliana*)*AtPARP1*基因上游长2 179 bp的启动子片段插入到质粒pAKK687的 β -葡萄糖醛酸糖苷酶(GUS)报告基因上游, 转化拟南芥。GUS组织化学染色结果表明, *GUS*报告基因仅在苗龄3-5天的拟南芥根部及花发育早期的雄蕊中表达; $1.5 \mu\text{g} \cdot \text{mL}^{-1}$ 博莱霉素与 $22 \mu\text{g} \cdot \text{mL}^{-1}$ 丝裂霉素联用强烈诱导了*GUS*报告基因的表达(尤其在拟南芥的幼苗和果荚中)。进一步降低抗生素浓度, 发现单独使用 $1 \mu\text{g} \cdot \text{mL}^{-1}$ 博莱霉素对*GUS*报告基因也具有较强的诱导活性, 且对拟南芥幼苗的生长无影响。上述结果表明, *AtPARP1*启动子是一个新型的具较大应用潜力的抗生素诱导型启动子。

关键词: 抗生素 拟南芥 博莱霉素 诱导型启动子 多聚ADP核糖聚合酶

Abstract: Poly ADP-ribose polymerase (PARP) is induced specifically by genotoxin. We cloned the 2 179 bp promoter sequence of *Arabidopsis AtPARP1* gene into a pAKK687 vector to drive the expression of a β -glucuronidase (*GUS*) reporter gene for *Arabidopsis* transformation. GUS staining revealed the *GUS* reporter gene expressed only in the basal root of 3 to 5-day-old seedlings and in the anther at early flowering stage. An amount of $1.5 \mu\text{g} \cdot \text{mL}^{-1}$ bleomycin combined with $22 \mu\text{g} \cdot \text{mL}^{-1}$ mitomycin could strongly induce the expression of the *GUS* reporter gene, especially in young seedlings and young siliques of *Arabidopsis*. An amount of $1 \mu\text{g} \cdot \text{mL}^{-1}$ bleomycin was enough to induce the promoter and had no adverse effects on *Arabidopsis* seedling growth. The *AtPARP1* promoter may be a new antibiotic-inducible promoter with application potential.

Keywords: antibiotics *Arabidopsis* bleomycin inducible promoter poly ADP-ribose polymerase

Received 2011-01-31; published 2011-09-01

Fund:

国家自然科学基金青年基金项目; 国家自然科学基金青年基金项目

Corresponding Authors: 葛晓春 Email: xcge@fudan.edu.cn

引用本文:

刘伟伟, 张海磊, 刘财丰等. 一种受抗生素诱导的启动子的构建及活性分析[J] 植物学报, 2011, V46(5): 560-568

Weiwei Liu, Hailei Zhang, Caifeng Liu etc. Construction and Activity Analysis of an Antibiotic-inducible Promoter[J], 2011, V46(5): 560-568

链接本文:

<http://www.chinbullbotany.com//CN/10.3724/SP.J.1259.2011.00560> 或 <http://www.chinbullbotany.com//CN/Y2011/V46/I5/560>

Service

- ▶ [把本文推荐给朋友](#)
- ▶ [加入我的书架](#)
- ▶ [加入引用管理器](#)
- ▶ [Email Alert](#)
- ▶ [RSS](#)

作者相关文章

- ▶ [刘伟伟](#)
- ▶ [张海磊](#)
- ▶ [刘财丰](#)
- ▶ [葛晓春](#)