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农杆菌介导大豆子叶节遗传转化体系的优化

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作者: 翟锐 (KeySearch.aspx?type=Name&Sel=翟锐)；高乐 (KeySearch.aspx?type=Name&Sel=高乐)；丁雪妮 (KeySearch.aspx?type=Name&Sel=丁雪妮)；廖文林 (KeySearch.aspx?type=Name&Sel=廖文林)；郑明洁 (KeySearch.aspx?type=Name&Sel=郑明洁)；陆智文 (KeySearch.aspx?type=Name&Sel=陆智文)；智海剑 (KeySearch.aspx?type=Name&Sel=智海剑)
南京农业大学 大豆研究所/国家大豆改良中心/作物遗传与种质创新国家重点实验室/农业部大豆生物学与遗传育种重点实验室，江苏 南京 210095

Author(s): ZHAI Rui (KeySearch.aspx?type=Name&Sel=ZHAI Rui)；GAO Le (KeySearch.aspx?type=Name&Sel=GAO Le)；DING Xue-ni (KeySearch.aspx?type=Name&Sel=DING Xue-ni)；LIAO Wen-lin (KeySearch.aspx?type=Name&Sel=LIAO Wen-lin)；ZHENG Ming-jie (KeySearch.aspx?type=Name&Sel=ZHENG Ming-jie)；LU Zhi-wen (KeySearch.aspx?type=Name&Sel=LU Zhi-wen)；ZHI Hai-jian (KeySearch.aspx?type=Name&Sel=ZHI Hai-jian)
Soybean Research Institute of Nanjing Agricultural University/National Center for Soybean Improvement/National Key Laboratory for Crop Genetics and Germplasm Enhancement/Key Laboratory of Biology and Genetic Improvement of Soybean, Ministry of Agriculture, P.R. China, Nanjing 210095, China

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摘要: 利用农杆菌菌株EHA105，对17个栽培大豆品种的大豆子叶节进行了侵染，从大豆基因型、氯气灭菌时间、外植体状态、菌株活力、侵染浓度、侵染时间、共培养时间等方面进行了优化。结果表明：氯气灭菌14～18 h，可在不影响大豆种子活力的同时最大限度的减少污染；暗处理1 d的外植体活力高于光照处理5～7 d的外植体；菌液浓度（OD_{600nm}）在0.8～1.0且侵染浓度（OD_{600nm}）为0.6～0.8时GUS瞬时表达率最高；适宜的侵染时间和共培养天数分别为30 min和4 d。在上述优化研究基础上，形成一套综合的转基因体系，该体系的最高转化率可达3.33%。不同处理下的GUS瞬时表达率以及17个大豆品种的丛生芽诱导率综合评价显示，适宜转化的基因型为TL-1、HC-3、HC-6、Williams 82。

Abstract: In the present study, cotyledon nodes obtained from 17 soybean cultivars were infected with Agrobacterium tumefacines EHA105.Subsequently, we optimized the soybean genotype, chlorine sterilization time, explant state, vitality of bacterial strain, concentration of infection liquid, infection time and co-cultivation time. As a result, when the chlorine sterilization time was 14-18 h, the minimal pollution and the highest seed vigor was observed. The vitality of overnight-treated explants in the dark were better than those germinated in the light for 5-7 d. The highest GUS transient rate was achieved when the bacterial concentration at OD_{600nm} was 0.8-1.0 and the infection liquid at $OD_{600nm}$was 0.6-0 .8.We also found that the best infection and co-cultivation time were 30 min and 4 d, respectively. Based on the above optimized research, we established a comprehensive transgenic system which resulted in the maximum transformation efficiency of 3.33%. For the comprehensive evaluation about the transient GUS expression under different treatments and the shoot induction rate of 17 soybean varieties, TL-1, HC-3, HC-6 and Williams 82 were the ideal genotypes for transformation.

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第一作者简介：翟锐（**1987-**），女，硕士，主要从事转基因大豆抗病品种培育。**E-mail: 2012101166@njau.edu.cn**。
通讯作者：智海剑（**1957-**），男，教授，博导，主要从事大豆遗传育种研究。**E-mail: zhj@njau.edu.cn**。

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