

[Plant Seed] Direct Gene Transfer into Mature Seeds via Electroporation

Direct gene transfer after the vacuum treatment.
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We are ready for patent licensing negotiation.



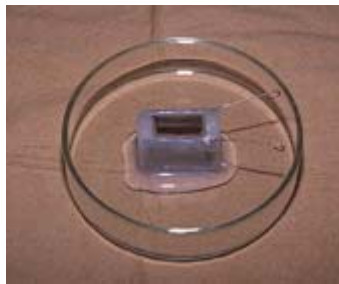
Basic Method

- 1: Soak mature seeds in water overnight.
- 2: Transfer the seeds into electroporation buffer.
- 3: Vacuum treatment.
- 4: Electroporation on ice.
- 5: Incubate the seeds on ice for a few hours.
- 6: Grow the plants under the favorable conditions.
- 7: Select the transformed plants using antibiotics.

Fig. 1. Electroporation Apparatus and the Chamber (Produced by NEPA GENE Co., Ltd.)



Apparatus: CUY21EDIT



Chamber: CUY495P10



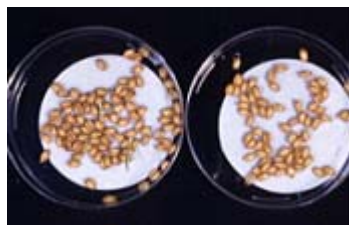
Electroporation on ice

Fertile transgenic plants were regenerated and self-fertilized seeds were obtained in rice and wheat. Transgene integration was confirmed by Southern hybridization. Transmission of the transgene into the next generation (T_1) was indicated by PCR analysis. Transient gene expression was observed in several plant species and silk worm eggs.

Fig. 2. Production of Transgenic Wheat



GUS Gene Expression



Selection by Geneticin



Transformed Plants

- 1: Starting materials are mature seeds.
- 2: Transformed plants are obtained in relatively short time.
- 3: Plant tissue culture is not necessary.
- 4: Possibly applicable to animal cells and microorganisms.

Fig. 3. Transient GUS Gene Expression



Rice (japonica)



Rice (indica)

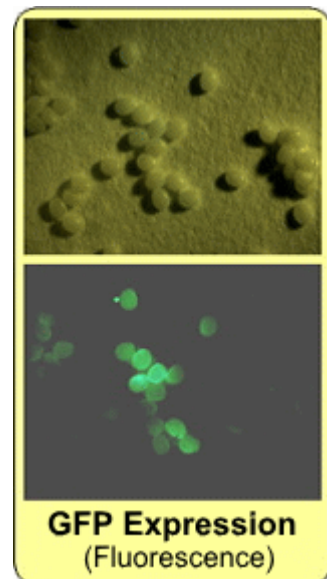


Brassica



Soybean

Fig. 4. Gene transfer into Silk Worm Eggs



GFP Expression (Fluorescence)