SIMULTANEOUS HIGH-EFFICIENCY EDITING OF MULTIPLE ALLELES IN PLANT CELLS

Tech ID: 34524 / UC Case 2026-088-0

PATENT STATUS

Patent Pending

BRIEF DESCRIPTION

Agrobacterium mediated plant transformation is a slow process that integrates foreign DNA into the genome, necessitating years of backcrossing to meet regulatory requirements. Current DNA free delivery methods often suffer from low editing efficiency and struggle to target multiple genes simultaneously. UC Berkeley researchers have developed a high efficiency genome editing platform that utilizes anionic polymers to enhance the delivery of CRISPR ribonucleoproteins into plant cells. This method can increase editing efficiency by up to 2400% and enable the simultaneous modification of four or more target sites in a single cell.

SUGGESTED USES

- High efficiency genome editing of multiple agronomically-relevant traits in single step.
- Development of DNA free, gene edited crop varieties to facilitate faster regulatory approval.
- Functional genomics and high throughput screening of genetic variants in plant protoplasts.
- Precise pathway engineering through simultaneous multi gene adjustments in single cells.

ADVANTAGES

- Increases editing efficiency by up to 2400% over standard delivery methods.
- Enables simultaneous editing of four or more target sites.
- Eliminates transgene integration.
- Proven effective across diverse plants, including rice, *Arabidopsis*, and *Nicotiana benthamiana*

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Gene Delivery Into Mature Plants Using Carbon Nanotubes
- Method For Imaging Neurotransmitters In Vitro and In Vivo Using Functionalized Carbon Nanotubes
- Cell Penetrating Peptides For Nucleic Acid And Protein Delivery In Plants

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INVENTORS

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OTHER INFORMATION

CATEGORIZED AS

- **Agriculture & Animal Science**
  - Plant Traits
- **Biotechnology**
  - Genomics
- **Research Tools**
  - Screening Assays

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