Improved Plant Regeneration Method Using GRFs, GIFs or Chimeric GRF-GIF Proteins

Tech ID: 31641 / UC Case 2019-562-0

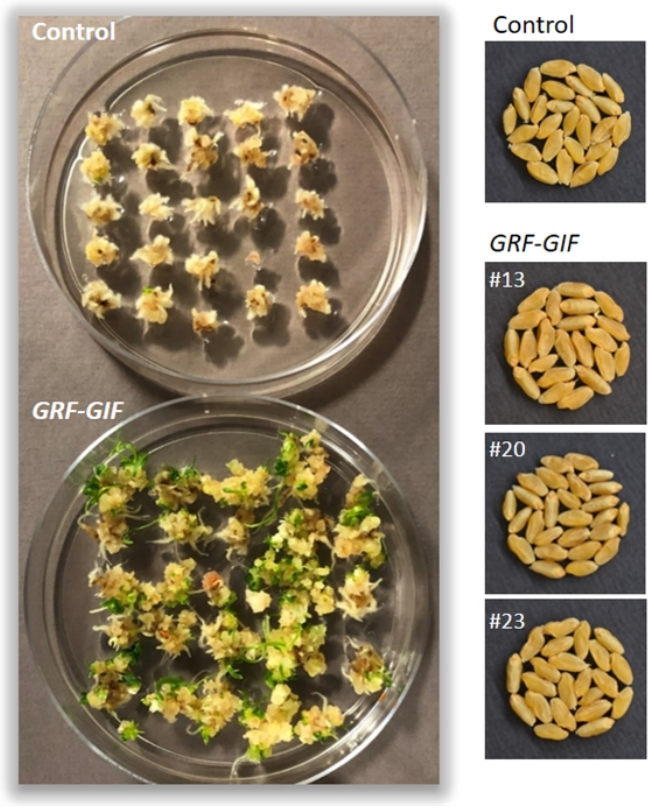
ABSTRACT

Researchers at the University of California, Davis and the Institute of Molecular and Cellular Biology of Rosario in Argentina have collaborated to develop methods for improving plant regeneration efficiency using transformations via a GRF, a GIF, or a GRF-GIF chimera.

FULL DESCRIPTION

Gene editing has revolutionized the development of new plant varieties. Unfortunately, many important crops species exhibit prohibitively low regeneration efficiencies and are therefore incompatible or minimally compatible with gene editing. There is, therefore, a significant need to improve plant regeneration.

Researchers have collaborated on methods for improving plant regeneration efficiency that apply various Growth-Regulating Factors (GRF), GRF-Interacting Factors (GIF) or GRF-GIF chimera to transformed plant cells. These methods dramatically increase regeneration efficiency, reduce the time required to regenerate transgenic plants and can eliminate the need for plant selectable marker genes.



APPLICATIONS

- Greatly increases regeneration efficiency in several plant varieties
- Accelerates the production of transgenic plants from leaf explants instead of embryos
- Increases the range of genotypes capable of being transformed efficiently

FEATURES/BENEFITS

- Increases regeneration frequency of various crops with previously low transformation capacities
- Eliminates exposure to exogenous cytokinins required by many plant transformation systems

PATENT STATUS

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OTHER INFORMATION

KEYWORDS

Transformation, regeneration efficiency, GRF, GIF, wheat, crops; chimera, plant proteins

CATEGORIZED AS

- **Agriculture & Animal Science**
  - Plant Traits
- **Biotechnology**
  - Food
  - Genomics

RELATED CASES

2019-562-0

Country	Type	Number	Dated	Case
United States Of America	Published Application	20230032478	02/02/2023	2019-562

RELATED MATERIALS

- A rapid and highly efficient sorghum transformation strategy using GRF4-GIF1/ternary vector system - 07/10/2024
- Use of GRF-GIF chimeras and a ternary vector system to improve maize (Zea mays L.) transformation frequency - 07/10/2024
- Overexpression of GRF-GIF genes enhances plant regeneration in cassava (Manihot esculenta) - 07/10/2024

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- High Transformation Efficiency Non-Dormant Alfalfa Line 2525-14

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