

Request Information

Permalink

# Genes Controlling Barrier Formation in Roots

Tech ID: 33833 / UC Case 2021-905-0

## ABSTRACT

Researchers at the University of California, Davis have developed advancements in understanding exodermal differentiation in plant roots highlighting the role of two transcription factors in plant adaptation and survival.

## FULL DESCRIPTION

This invention covers edited plants that have increased root suberiation and therefore greater drought tolerance and root pathogen resistance than control plants. The claimed plants can be achieved through deletion-only edits. The researchers have identified two transcription factors that restrict the deposition of the polar lignin cap to the exodermis and help in regulating the polarity of this cap, respectively.

## APPLICATIONS

- ▶ Agriculture: Enhancing crop resilience to extreme conditions.
- ▶ Environmental Science: Promoting carbon sequestration in soil.
- ▶ Plant Breeding: Development of drought and salt-tolerant crop varieties.
- ▶ Biotechnology: Genetic modification of plants for improved performance.

## FEATURES/BENEFITS

- ▶ Offers a deeper understanding of plant biology and root structure.
- ▶ Helps breeding plants for drought and salt tolerance.
- ▶ Improves plant survival by controlling ion homeostasis and growth.
- ▶ Potential application in carbon sequestration.
- ▶ Unveils the process of exodermal differentiation in plants.
- ▶ Identifies key transcription factors involved in the regulation of lignin cap deposition.
- ▶ Contributes to solving issues related to plant adaptation in unfavorable environmental conditions.

## PATENT STATUS

Patent Pending

## CONTACT

Eugene Sisman  
[esisman@ucdavis.edu](mailto:esisman@ucdavis.edu)  
tel: 530-754-7650.



## INVENTORS

- ▶ Brady, Siobhan
- ▶ Fernandez, Concepcion M

## OTHER INFORMATION

### KEYWORDS

barrier formation, biotechnology, carbon sequestration, crop resilience, drought tolerance, environmental science, exodermal differentiation, plant breeding, root pathogen resistance, transcription factors

### CATEGORIZED AS

- ▶ **Agriculture & Animal Science**
  - ▶ Plant Traits
  - ▶ Plant Varieties
  - ▶ Transgenics
- ▶ **Biotechnology**
  - ▶ Genomics
  - ▶ Other
- ▶ **Environment**
  - ▶ Other
- ▶ **Materials & Chemicals**
  - ▶ Agricultural

▶ Biological

▶ **Research Tools**

▶ Bioinformatics

#### RELATED CASES

2021-905-0

#### ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ [Gene Editing for Improved Plant Characteristics via Modulation of Suberin Regulators](#)
- ▶ [Microbial-Induced Barriers To Striga Parasitism](#)

**University of California, Davis**

**Technology Transfer Office**

1850 Research Park Drive, Suite 100, ,

Davis, CA 95618

Tel: 530.754.8649

[techtransfer@ucdavis.edu](mailto:techtransfer@ucdavis.edu)

[https://research.ucdavis.edu/technology-](https://research.ucdavis.edu/technology-transfer/)

[transfer/](https://research.ucdavis.edu/technology-transfer/)

Fax: 530.754.7620

© 2024, The Regents of the University of California

[Terms of use](#)

[Privacy Notice](#)