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

Country	Type	Number	Dated	Case
Patent Cooperation Treaty	Reference for National Filings	WO2024/081375A1	04/18/2024	2021-905

Patent Pending

CONTACT

Ediz O. Yonter
eoyonter@ucdavis.edu
tel: .

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

- Microbial-Induced Barriers To Striga Parasitism

University of California, Davis
Technology Transfer Office
1 Shields Avenue, Mrak Hall 4th Floor,
Davis,CA 95616

Tel:
530.754.8649
techtransfer@ucdavis.edu
https://research.ucdavis.edu/technology-transfer/
Fax:
530.754.7620