

# Photoperiod sensitive genetic male sterility mutant of cotton and application thereof

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## Abstract

The present invention provides an application of a photoperiod sensitive genetic male sterility mutant of cotton in hybrid seed production or breeding. Fertility of the photoperiod sensitive genetic male sterility mutant of cotton is influenced by photoperiod, and the photoperiod characteristic is that when illumination time is less than 11.5 hours, the photoperiod is normal fertility, when the illumination time is greater than 12 hours, the photoperiod is genic male sterility, and when the illumination time is 11.5-12 hours, the photoperiod is a sterility variation period having a small amount of pollen. The photoperiod sensitive genetic male sterility mutant of cotton is PSM1 and/or a photoperiod sensitive genetic sterile line bred from hybridization and/or backcrossing and/or selfing of the PSM1. Due to the fact that the photoperiod in the normal production phase of the cotton in the whole Chinese cotton region meets the male sterility condition of the PSM1, hybrid seed production and new variety breeding can be carried out by utilizing the material and progenies thereof.

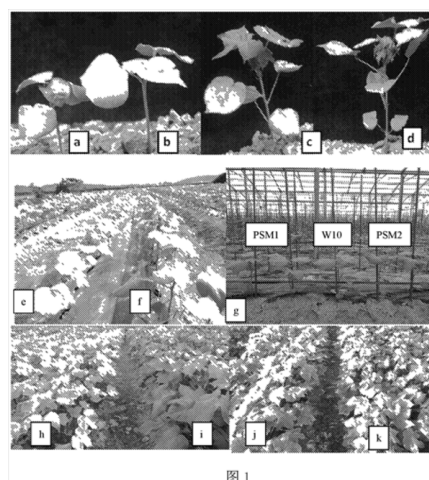


图 1

## Methods and compositions for regulation of plant growth

Patent number: US20190177740 A1

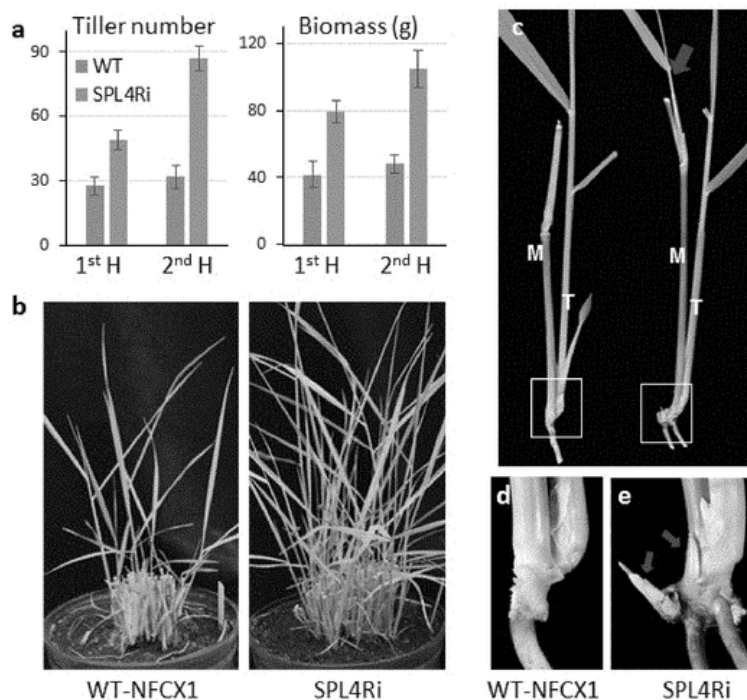
Date of Publication: 2019-06-13

Applicant(s): GOU JIQING, WANG ZENG-YU

NOBLE RESEARCH INSTITUTE

### Abstract

The present invention provides methods for regulating plant architecture, improving biomass yield or regrowth after cutting through down-regulation of SPL4 gene function. Also provided are transgenic plants with improved biomass yield or regrowth after cutting produced by such methods.



**FIG. 5**

# Genetically engineered land plants that express lcid/e protein and optionally a ccp1 mitochondrial transporter protein and/or pyruvate carboxylase

Patent number: WO2019/104278 A1

Date of Publication: 2019-05-31

Applicant(s): SKRALY FRANK, SNELL KRISTI

YIELD10 BIOSCIENCE

## Abstract

A genetically engineered land plant that expresses an LCID/E protein is provided. The plant comprises a modified gene for the LCID/E protein. The LCID/E protein comprises (i) LCID of *Chlamydomonas reinhardtii* of SEQ ID NO: 4, (ii) LCIE of *Chlamydomonas reinhardtii* of SEQ ID NO: 5, or (iii) an algal or plant ortholog of LCID/E. The LCID/E protein is localized to chloroplasts of the plant based on a plastidial targeting signal. The modified gene for the LCID/E protein comprises (i) a promoter and (ii) a nucleic acid sequence encoding the LCID/E protein. The promoter is non-cognate with respect to the nucleic acid sequence encoding the LCID/E protein. The modified gene for the LCID/E protein is configured such that transcription of the nucleic acid sequence is initiated from the promoter and results in expression of the LCID/E protein. Optionally, the plant also expresses a CCP1 mitochondrial transporter protein and/or pyruvate carboxylase.

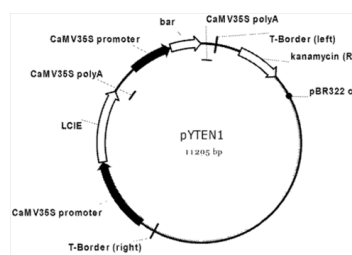


FIG. 3A

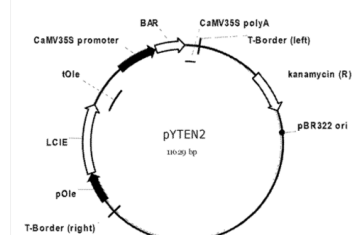


FIG. 3B

## Methods and compositions for modulating gossypol content in cotton plants

Patent number: WO2019/075387 A1

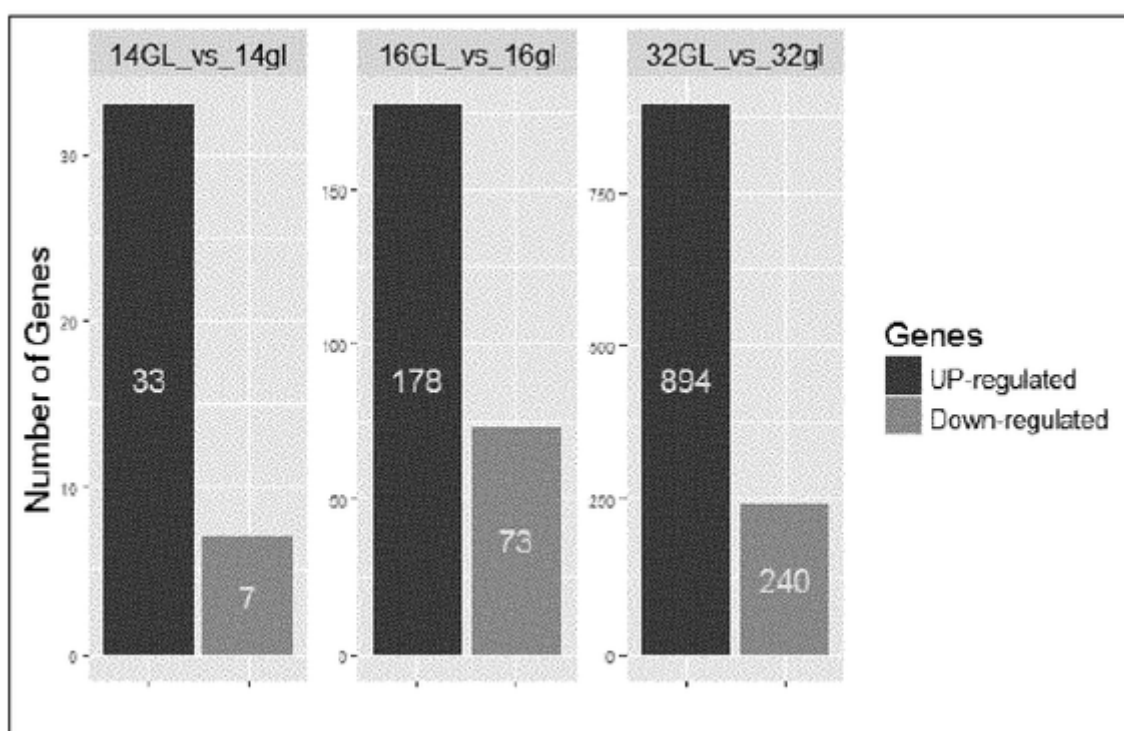
Date of Publication: 2019-04-18

Applicant(s): RATHORE KEERTI S, JANGA MADHUSUDHANA R, PANDEYA DEVENDRA, CAMPBELL LEANNE M

TEXAS A & M UNIVERSITY

### Abstract

The present disclosure provides cotton plants with reduced gossypol levels in the seed, and in further embodiments provides cotton plants with increased gossypol levels in the leaves. Also provided are methods for reducing gossypol content in seeds of a cotton plant by down-regulation of CGF2 expression, and in certain embodiments CGF1 and/or CGF3 expression, in the plant, and methods for increasing gossypol content in leaves of a cotton plant by tissue-specific overexpression of CGF2, and in certain embodiments CGF1 and/or CGF3, in the plant.



## High growth and high hardiness transgenic plants

Patent number: WO2019/038594 A3

Date of Publication: 2019-05-02

Applicant(s): WARGENT JASON, ROSSIG CLAUDIA  
BIOLUMIC

### Abstract

Aspects of the disclosure relate to systems and methods for enhancing plant performance by identifying and manipulating the expression of plant genes involved in UV-B mediated improvements to hardiness and growth. Some aspects of the disclosure relate to systems and methods for identifying plant novel genes responsive to light stimulation. Some aspects of the disclosure relate to systems and methods for identifying transgenic plants improved so as to present desired agronomic traits associated with UV-B light stimulation. Some aspects of the disclosure relate to systems and methods for modulating plant sensitivity to light for enhancing plant performance or a desired agronomic trait. Some aspects of the disclosure relate to systems and methods for generating stable transgenic plants that exhibit a desired agronomic trait.

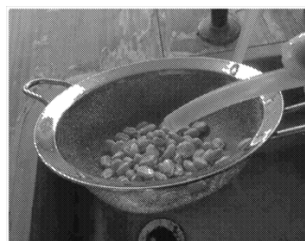


FIG. 1

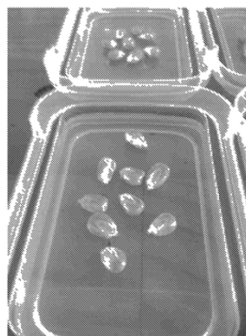


FIG 2

Compositions and methods comprising endophytic bacterium for application to target plants to increase plant growth, and increase resistance to abiotic and biotic stressors

Patent number: WO2019/028355 A1

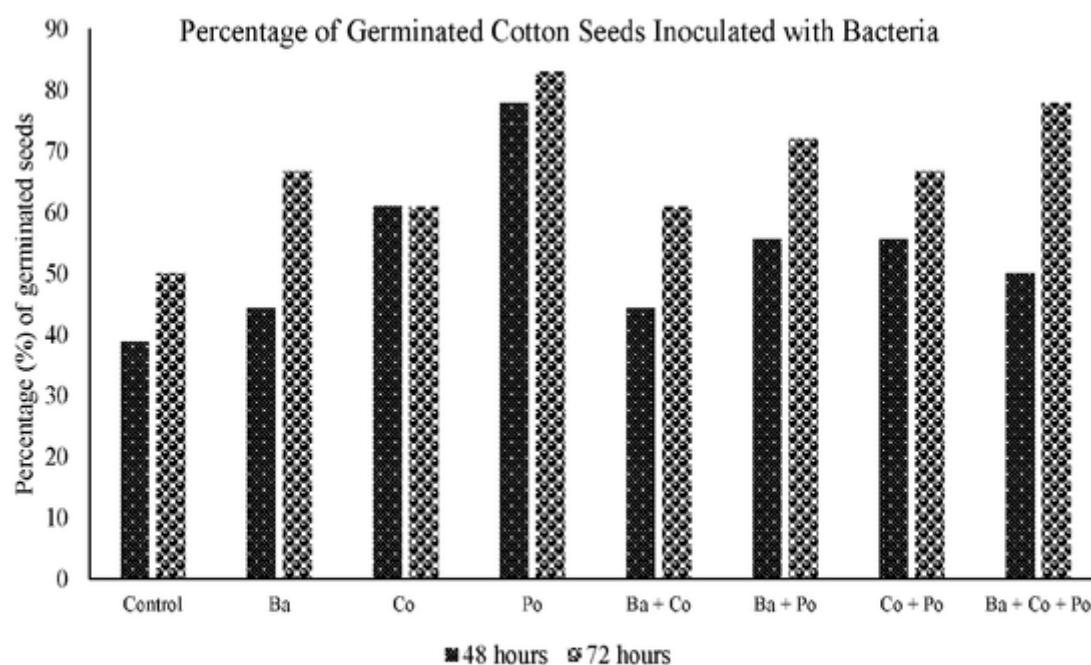
Date of Publication: 2019-02-07

Applicant(s): WHITE JAMES, CARABALLO IVELISSE

RUTGERS UNIVERSITY

### Abstract

Endophytic bacteria, compositions comprising the same, and methods of use thereof are disclosed which increase the root and shoot growth of cotton host plants, suppress growth of soil borne fungal pathogens of host plants, and increase resistance of the plant to salt stress and other abiotic stressors.



**Figure 2**

## Transformation vector and transformant, and transformant-derived product

Patent number: WO2019/026948 A1

Date of Publication: 2019-02-07

Applicant(s): SUZUKI Sakae

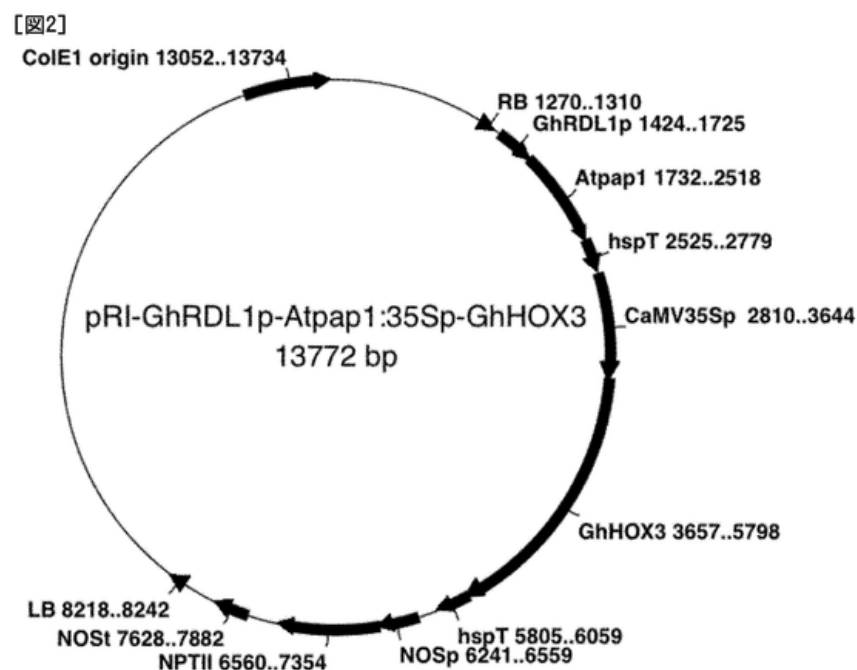
NIPPON STEEL & SUMIKIN METAL

TOKYO UNIVERSITY OF AGRICULTURE & TECHNOLOGY

NIPPON STEEL & SUMIKIN BUSSAN

### Abstract

To provide a vector including a transcription factor and a promoter expressed specifically in the fiber structure of a plant, particularly cotton. [Solution] A vector including at least one promoter expressed specifically in cotton fiber and/or the seed surface of cotton, and at least one transactivator for activating transcription from the promoter. A cell, tissue, callus, or transgenic plant and/or seed thereof transformed using *Agrobacterium* transformed with the vector.





# Transgenic land plants comprising enhanced levels of mitochondrial transporter protein

Patent number: WO2018/156686 A1

Date of Publication: 2018-08-30

Applicant(s): PEOPLES OLIVER, SNELL KRISTI, MALIK MEGHNA, AMBAVARAM MADANA  
YIELD10 BIOSCIENCE

## Abstract

A transgenic land plant is provided. The transgenic land plant comprises a mitochondrial transporter protein of a eukaryotic algae. The mitochondrial transporter protein of the eukaryotic algae is heterologous with respect to the transgenic land plant. The mitochondrial transporter protein is a sequence or ortholog of CCP1 of *Chlamydomonas reinhardtii*, a mitochondrial transporter protein of *Chlorella sorokiniana*, a mitochondrial transporter protein of *Chlorella variabilis*, a mitochondrial transporter protein of *Chondrus crispus*, a mitochondrial transporter protein of *Gonium pectorale*, or a mitochondrial transporter protein of *Volvox carteri*. The mitochondrial transporter protein is localized to mitochondria of the transgenic land plant based on a mitochondrial targeting signal intrinsic to the mitochondrial transporter protein. The mitochondrial transporter protein is localized to mitochondria of the transgenic land plant based on a mitochondrial targeting signal intrinsic to the mitochondrial transporter protein and is expressed predominantly in seeds of the transgenic land plant.

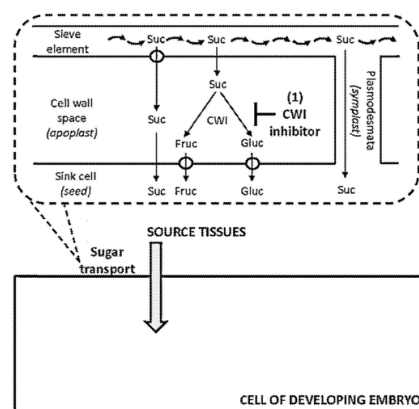


FIG. 15



## Cotton transgenic event tam66274

Patent number: WO2019/014126 A1

Date of Publication: 2019-01-17

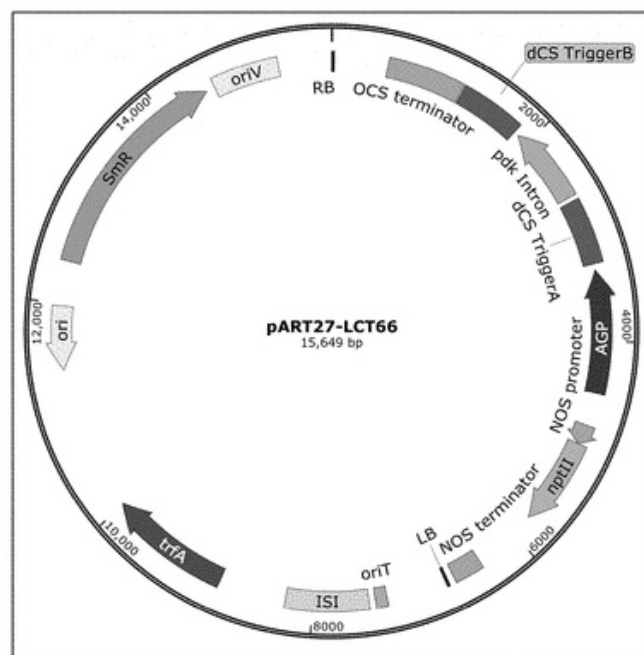
Applicant(s): RATHORE KEERTI S, PANDEYA DEVENDRA, CAMPBELL LEANNE M, PALLE SREENATH R

TEXAS A & M UNIVERSITY

### Abstract

The invention provides cotton event TAM66274, and plants, plant cells, seeds, plant parts, and commodity products comprising event TAM66274. The invention also provides polynucleotides specific for event TAM66274 and plants, plant cells, seeds, plant parts, and commodity products comprising polynucleotides specific for event TAM66274. The invention also provides methods related to event TAM66274.

Fig. 2



## Cotton variety st 5818glt

Patent number: US20190200565 A1

Date of Publication: 2019-07-04

Applicant(s): ROBINSON MICHAEL

BASF AGRICULTURAL SOLUTIONS SEED

COTTON SEED INTERNATIONAL

### Abstract

The disclosure provides a new cotton variety ST 5818GLT. The disclosure relates to seeds, plants, plant cells, plant tissue, harvested products and cotton lint as well as to hybrid cotton plants and seeds obtained by repeatedly crossing plants of variety ST 5818GLT with other plants. The disclosure also relates to plants of variety ST 5818GLT reproduced by vegetative methods, including but not limited to tissue culture of regenerable cells or tissue from cotton variety ST 5818GLT.