



US008143483B2

(12) **United States Patent**
Huang et al.

(10) **Patent No.:** **US 8,143,483 B2**
(45) **Date of Patent:** **Mar. 27, 2012**

(54) **GENES FOR PROMOTING PLANT GROWTH AND USE THEREOF**

(75) Inventors: **Pung-Ling Huang, Taipei (TW); Yi-Yin Do, Taipei (TW); Meng-Jin Lin, Taipei (TW)**

(73) Assignee: **National Taiwan University, Taipei (TW)**

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 144 days.

(21) Appl. No.: **12/610,064**

(22) Filed: **Oct. 30, 2009**

(65) **Prior Publication Data**
US 2011/0107462 A1 May 5, 2011

(51) **Int. Cl.**
A01H 5/00 (2006.01)

(52) **U.S. Cl.** **800/290; 536/23.6; 435/419; 435/468**

(58) **Field of Classification Search** None
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

6,858,774 B2* 2/2005 Spalding et al. 800/278

OTHER PUBLICATIONS

Crouzet et al (FEBS Letters 580 (2006) 1123-1130).*

Biemans-Oldhekinkel, et al, ABC transporter architecture and regulatory roles of accessory domains, Journal: FEBS Letters, pp. 1023-1035, Volume-issue No. 580, 2006.

Higgins, C. F., ABC transporter from microorganisms to man, Journal: Annu. Rev. Cell Biol., pp. 67-113, Volume-issue No. 8, 1992.

Schutzendu Bel, A. et al, Cadmium-induced changes in antioxidative systems, hydrogen peroxide content, and differentiation in Scots pine roots, Journal: Plant Physiology, pp. 887-898, Volume-issue No. 127, 2001.

* cited by examiner

Primary Examiner — Anne Marie Grunberg

Assistant Examiner — Lee Visone

(74) *Attorney, Agent, or Firm* — WPAT, P.C.; Anthony King

(57) **ABSTRACT**

The invention relates to genes for promoting rapid growth of plant, characterized in genes that are Banana ABC transporter MhPDR1 or MhPDR2 genes, wherein the transporters have amino acid sequences depicted in SEQ ID No: 1 and SEQ ID No: 3, respectively, and the genes have nucleotide sequences depicted in SEQ ID No: 2 and SEQ ID No: 4, respectively. The invention provides further applications of the banana transporter MhPDR1 or MhPDR2 genes, characterized in that the over-expression of the genes in a plant can promote rapid growth of the plant. In addition, the present invention provides a transgenic plant or partial organ, tissue or cells thereof containing the genes or derivatives thereof; as well as provides further a method for promoting rapid growth of a plant.

6 Claims, 17 Drawing Sheets