

Accepted Manuscript

Title: Update on amino acid transporter functions and on possible amino acid sensing mechanisms in plants

Authors: Kasia Dinkeloo, Shelton Boyd, Guillaume Pilot

PII: S1084-9521(16)30392-5
DOI: <http://dx.doi.org/doi:10.1016/j.semcd.2017.07.010>
Reference: YSCDB 2273

To appear in: *Seminars in Cell & Developmental Biology*

Received date: 2-5-2017
Revised date: 30-6-2017
Accepted date: 7-7-2017



Please cite this article as: Dinkeloo Kasia, Boyd Shelton, Pilot Guillaume. Update on amino acid transporter functions and on possible amino acid sensing mechanisms in plants. *Seminars in Cell and Developmental Biology* <http://dx.doi.org/10.1016/j.semcd.2017.07.010>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Title:

Update on amino acid transporter functions and on possible amino acid sensing mechanisms in plants

Authors:

Kasia Dinkeloo^{a1}, Shelton Boyd^{a1} and Guillaume Pilot^{a*}

^a Department of Plant Pathology, Physiology and Weed Science, Virginia Tech, Blacksburg, VA 24060, USA

* Corresponding author at: Department of Plant Pathology, Physiology and Weed Science, Virginia Tech, Blacksburg, VA 24060, USA

E-mail address: gpilot@vt.edu (G. Pilot)

¹ These authors contributed equally.

Abstract:

Amino acids are essential components of plant metabolism, not only as constituents of proteins, but also as precursors of important secondary metabolites and carriers of organic nitrogen between the organs of the plant. Transport across intracellular membranes and translocation of amino acids within the plant is mediated by membrane amino acid transporters. The past few years have seen the identification of a new family of amino acid transporters in Arabidopsis, the characterization of intracellular amino acid transporters, and the discovery of new roles for already known proteins, for instance in hormone transport. While amino acid metabolism needs to be tightly coordinated with amino acid transport activity and carbohydrate metabolism, no gene involved in amino acid sensing in plants has been unequivocally identified to date. This review aims at summarizing the recent data accumulated on the identity and function of amino acid transporters in plants, and discussing the possible identity of amino acid sensors based on data from other organisms.

Keywords:

Plant
Amino acid
Transporter
Transceptor
Sensor
Metabolism

1. Introduction

Plants absorb both inorganic nitrogen (ammonium and nitrate) and organic nitrogen (amino acids and peptides) from the soil [1]. The first organic nitrogenous molecule produced from inorganic nitrogen is Gln, whose terminal amino group is successively transferred to Glu and other amino acids to synthesize all the nitrogen-containing compounds of the cell. Within the cell, amino acids are synthesized [2], used, and degraded [3] in various compartments (namely chloroplast, cytosol, peroxisomes,

Download English Version:

<https://daneshyari.com/en/article/8479795>

Download Persian Version:

<https://daneshyari.com/article/8479795>

[Daneshyari.com](https://daneshyari.com)