Multiple pathways regulate shoot branching

Submitted by Jose Gentilhomme on Wed, 05/20/2015 - 14:30

Titre

Multiple pathways regulate shoot branching

Type de publication

Article de revue

Auteur

Rameau, Catherine [1], Bertheloot, Jessica [2], Leduc, Nathalie [3], Andrieu, Bruno [4], Foucher, Fabrice [5], Sakr, Soulaiman [6]

Pays

Suisse

Editeur

Frontiers Research Foundation

Ville

Lausanne

Type

Article scientifique dans une revue à comité de lecture

Année

2015

Langue

Anglais

Date

Janv. 2015

Pagination

741

Volume

5

Titre de la revue

Frontiers in Plant Science

ISSN

1664-462X

Mots-clés

apical dominance [7], axillary bud outgrowth [8], cytokinins [9], flowering [10], modeling [11], polar auxin transport [12], shade avoidance [13], strigolactones [14]

Résumé en anglais

Shoot branching patterns result from the spatio-temporal regulation of axillary bud outgrowth. Numerous endogenous, developmental and environmental factors are integrated at the bud and plant levels to determine numbers of growing shoots. Multiple pathways that converge to common integrators are most probably involved. We propose several pathways involving not only the classical hormones auxin, cytokinins and strigolactones, but also other signals with a strong influence on shoot branching such as gibberellins, sugars or molecular actors of plant phase transition. We also deal with recent findings about the molecular mechanisms and the pathway involved in the response to shade as an example of an environmental signal controlling branching. We propose the TEOSINTE BRANCHED1, CYCLOIDEA, PCF transcription factor TB1/BRC1 and the polar auxin transport stream in the stem as possible integrators of these pathways. We finally discuss how modeling can help to represent this highly dynamic system by articulating knowledges and hypothesis and calculating the phenotype properties they imply.

URL de la notice

http://okina.univ-angers.fr/publications/ua11661 [15]

DOI

10.3389/fpls.2014.00741 [16]

Lien vers le document

http://dx.doi.org/10.3389/fpls.2014.00741 [16]

Titre abrégé

Front. Plant Sci.
