

The Arabidopsis Nitrate Transporter NRT2.4 Plays a Double Role in Roots and Shoots of Nitrogen-Starved Plants

Submitted by Emmanuel Lemoine on Thu, 02/12/2015 - 13:09

Titre	The Arabidopsis Nitrate Transporter NRT2.4 Plays a Double Role in Roots and Shoots of Nitrogen-Starved Plants
Type de publication	Article de revue
Auteur	Kiba, Takatoshi [1], Feria-Bourrellier, Ana-Belen [2], Lafouge, Florence [3], Lezhneva, Lina [4], Boutet-Mercey, Stéphanie [5], Orsel, Mathilde [6], Bréhaut, Virginie [7], Miller, Anthony [8], Daniel-Vedele, Françoise [9], Sakakibara, Hitoshi [10], Krapp, Anne [11]
Editeur	American Society of Plant Biologists
Type	Article scientifique dans une revue à comité de lecture
Année	2012
Langue	Anglais
Date	2012/01/01
Numéro	1
Pagination	245 - 258
Volume	24
Titre de la revue	The Plant Cell Online
ISSN	1040-4651
Résumé en anglais	<p>Plants have evolved a variety of mechanisms to adapt to N starvation. NITRATE TRANSPORTER2.4 (NRT2.4) is one of seven NRT2 family genes in <i>Arabidopsis thaliana</i>, and NRT2.4 expression is induced under N starvation. Green fluorescent protein and β-glucuronidase reporter analyses revealed that NRT2.4 is a plasma membrane transporter expressed in the epidermis of lateral roots and in or close to the shoot phloem. The spatiotemporal expression pattern of NRT2.4 in roots is complementary with that of the major high-affinity nitrate transporter NRT2.1. Functional analysis in <i>Xenopus laevis</i> oocytes and in planta showed that NRT2.4 is a nitrate transporter functioning in the high-affinity range. In N-starved <i>nrt2.4</i> mutants, nitrate uptake under low external supply and nitrate content in shoot phloem exudates was decreased. In the absence of NRT2.1 and NRT2.2, loss of function of NRT2.4 (triple mutants) has an impact on biomass production under low nitrate supply. Together, our results demonstrate that NRT2.4 is a nitrate transporter that has a role in both roots and shoots under N starvation.</p>
URL de la notice	http://okina.univ-angers.fr/publications/ua7829 [12]
DOI	10.1105/tpc.111.092221 [13]
Lien vers le document	http://dx.doi.org/10.1105/tpc.111.092221 [13]

- [1] [http://okina.univ-angers.fr/publications?f\[author\]=12445](http://okina.univ-angers.fr/publications?f[author]=12445)
- [2] [http://okina.univ-angers.fr/publications?f\[author\]=12446](http://okina.univ-angers.fr/publications?f[author]=12446)
- [3] [http://okina.univ-angers.fr/publications?f\[author\]=12447](http://okina.univ-angers.fr/publications?f[author]=12447)
- [4] [http://okina.univ-angers.fr/publications?f\[author\]=12448](http://okina.univ-angers.fr/publications?f[author]=12448)
- [5] [http://okina.univ-angers.fr/publications?f\[author\]=12081](http://okina.univ-angers.fr/publications?f[author]=12081)
- [6] [http://okina.univ-angers.fr/publications?f\[author\]=11777](http://okina.univ-angers.fr/publications?f[author]=11777)
- [7] [http://okina.univ-angers.fr/publications?f\[author\]=12449](http://okina.univ-angers.fr/publications?f[author]=12449)
- [8] [http://okina.univ-angers.fr/publications?f\[author\]=12450](http://okina.univ-angers.fr/publications?f[author]=12450)
- [9] [http://okina.univ-angers.fr/publications?f\[author\]=12022](http://okina.univ-angers.fr/publications?f[author]=12022)
- [10] [http://okina.univ-angers.fr/publications?f\[author\]=12451](http://okina.univ-angers.fr/publications?f[author]=12451)
- [11] [http://okina.univ-angers.fr/publications?f\[author\]=12016](http://okina.univ-angers.fr/publications?f[author]=12016)
- [12] <http://okina.univ-angers.fr/publications/ua7829>
- [13] <http://dx.doi.org/10.1105/tpc.111.092221>

Publié sur *Okina* (<http://okina.univ-angers.fr>)