

# Identification and Characterization of Thioredoxin h Isoforms Differentially Expressed in Germinating Seeds of the Model Legume *Medicago truncatula*

Submitted by Emmanuel Lemoine on Thu, 02/12/2015 - 13:04

Titre Identification and Characterization of Thioredoxin h Isoforms Differentially Expressed in Germinating Seeds of the Model Legume *Medicago truncatula*

Type de publication Article de revue

Auteur Renard, Michelle [1], Alkhalifioui, Fatima [2], Schmitt-Keichinger, Corinne [3], Ritzenthaler, Christophe [4], Montrichard, Françoise [5]

Editeur American Society of Plant Biologists

Type Article scientifique dans une revue à comité de lecture

Année 2011

Langue Anglais

Date 2011/03/01

Numéro 3

Pagination 1113 - 1126

Volume 155

Titre de la revue Plant Physiology

ISSN 0032-0889

Résumé en anglais

Thioredoxins (Trxs) h, small disulfide reductases, and NADP-thioredoxin reductases (NTRs) have been shown to accumulate in seeds of different plant species and play important roles in seed physiology. However, little is known about the identity, properties, and subcellular location of Trx h isoforms that are abundant in legume seeds. To fill this gap, in this work, we characterized the Trx h family of *Medicago truncatula*, a model legume, and then explored the activity and localization of Trx h isoforms accumulating in seeds. Twelve Trx h isoforms were identified in *M. truncatula*. They belong to the groups previously described: h1 to h3 (group I), h4 to h7 (group II), and h8 to h12 (group III). Isoforms of groups I and II were found to be reduced by *M. truncatula* NTRA, but with different efficiencies, Trxs of group II being more efficiently reduced than Trxs of group I. In contrast, their insulin disulfide-reducing activity varies greatly and independently of the group to which they belong. Furthermore, Trxs h1, h2, and h6 were found to be present in dry and germinating seeds. Trxs h1 and, to a lesser extent, h2 are abundant in both embryonic axes and cotyledons, while Trx h6 is mainly present in cotyledons. Thus, *M. truncatula* seeds contain distinct isoforms of Trx h that differ in spatial distribution and kinetic properties, suggesting that they play different roles. Because we show that Trx h6 is targeted to the tonoplast, the possible role of this isoform during germination is finally discussed.

URL de la notice <http://okina.univ-angers.fr/publications/ua7775> [6]

DOI 10.1104/pp.110.170712 [7]

### **Liens**

- [1] [http://okina.univ-angers.fr/publications?f\[author\]=12083](http://okina.univ-angers.fr/publications?f[author]=12083)
- [2] [http://okina.univ-angers.fr/publications?f\[author\]=12084](http://okina.univ-angers.fr/publications?f[author]=12084)
- [3] [http://okina.univ-angers.fr/publications?f\[author\]=12085](http://okina.univ-angers.fr/publications?f[author]=12085)
- [4] [http://okina.univ-angers.fr/publications?f\[author\]=12086](http://okina.univ-angers.fr/publications?f[author]=12086)
- [5] <http://okina.univ-angers.fr/f.montrichard/publications>
- [6] <http://okina.univ-angers.fr/publications/ua7775>
- [7] <http://dx.doi.org/10.1104/pp.110.170712>

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