

## Accepted Manuscript

Title: The Arabidopsis *DWARF27* gene encodes an all-*trans*-*l9-cis*- $\beta$ -carotene isomerase and is induced by auxin, abscisic acid and phosphate deficiency

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PII: S0168-9452(18)30602-2  
DOI: <https://doi.org/10.1016/j.plantsci.2018.06.024>  
Reference: PSL 9893

To appear in: *Plant Science*

Received date: 24-5-2018  
Revised date: 28-6-2018  
Accepted date: 29-6-2018

Please cite this article as: Abuauf H, Haider I, Jia K-Peng, Ablazov A, Mi J, Blilou I, Al-Babili S, The Arabidopsis *DWARF27* gene encodes an all-*trans*-*l9-cis*- $\beta$ -carotene isomerase and is induced by auxin, abscisic acid and phosphate deficiency, *Plant Science* (2018), <https://doi.org/10.1016/j.plantsci.2018.06.024>

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## The Arabidopsis *DWARF27* gene encodes an all-*trans*-*l9-cis*- $\beta$ -carotene isomerase and is induced by auxin, abscisic acid and phosphate deficiency

**Running title:** Enzymatic activity and expression pattern of AtD27

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### Highlights

- Arabidopsis AtD27 catalyzes the reverse isomerization of all-*trans*-*l9-cis*- $\beta$ -carotene and carotenes with unmodified  $\beta$ -ionone ring.
- Using *pAtD27:NLS-GUS* lines and qRT-PCR assays, we show that *AtD27* expression is regulated by auxin, ABA and phosphate availability.
- We provide evidence for the isomerization activity *in planta* and for a role of AtD27 in determining shoots ABA content.

### Abstract

Strigolactones (SLs) are carotenoid-derived plant hormones that influence various aspects of plant growth and development in response to environmental conditions, especially nutrients deficiency. SLs are synthesized via a strict stereo-specific core pathway that leads to the intermediate carlactone, requiring the iron-containing

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