Yong Wang, Adv Crop Sci Tech 2016, 4:3 (Suppl)
http://dx.doi.org/10.4172/2329-8863.C1.002

Molecular regulation of nitrate in plants

Yong Wang
Shandong Agricultural University, China

We identified a novel gene named Nitrate Regulatory Gene 2 (NRG2) by using forward genetics, which mediates nitrate signaling in Arabidopsis. *NRG2* mutants showed inhibited induction of nitrate responsive genes after nitrate treatment by an ammonium independent mechanism. The nitrate content in roots was significantly lower in the mutants than in WT, which may have resulted from reduced expression of *NRT1.1* and up-regulation of NRT1.8. Genetic and molecular data suggest that *NRG2* functions upstream of *NRT1.1* in nitrate signaling. Furthermore, *NRG2* directly interacts with NLP7 in the nucleus but does not affect the nuclear retention of NLP7 in the presence of nitrate. Transcriptomic analysis revealed that genes involved in four nitrogen related clusters were differentially expressed in the *NRG2* mutants. A nitrogen compound transport cluster was regulated by both *NRG2* and *NRT1.1*, while no nitrogen related clusters showed regulation by both *NRG2* and NLP7. Thus, *NRG2* plays a key role in nitrate regulation in part through modulating *NRT1.1* expression and may function with NLP7 via their physical interaction. *NRG2* family consists of 16 members and each protein contains two uncharacterized functional domains: DUF630 and DUF632. We further investigated the role of NRG2.10 and NRG2.15 in regulating nitrate signaling in Arabidopsis. The results showed that the induction of nitrate responsive genes after nitrate treatments and the nitrate accumulation in seedlings were affected in both NRG2.10 and NRG2.15 mutants. These findings demonstrate that *NRG2* family members play important roles in nitrate signaling.

Biography

Yong Wang has obtained his PhD degree from University of Lausanne in Switzerland in 2006 and Postdoctoral studies from the University of California, San Diego in USA. He has been working as a Professor at Shandong Agricultural University in China since 2010. He has published many papers in reputed journals including The Plant Cell and Plant Physiology etc.

wangyong@sdau.edu.cn

Notes: