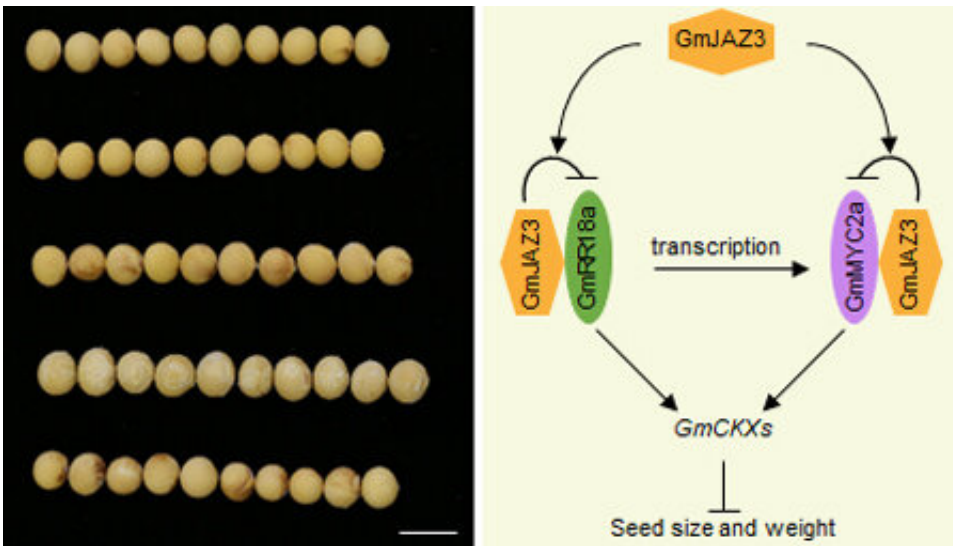


Researchers reveal novel module that influences soybean seed traits

April 27 2023, by Zhang Nannan



Phenotype analysis of GmJAZ3-overexpression plants and its working model.
Credit: IGDB

Soybean (*Glycine max*) is an important economic crop, providing 28.7% of the world's vegetable oil and 70.7% of its protein meal. Seed weight is usually associated with seed size and is one of the most important agronomic traits determining yield. However, understanding of the genetic and molecular basis of soybean seed size/weight control is very limited.

Researchers led by Prof. Zhang Jinsong from the Institute of Genetics and Developmental Biology (IGDB) of the Chinese Academy of

Sciences recently reported that the GmJAZ3-GmRR18a-GmMYC2a-GmCKXs module regulates seed-related traits through the crosstalk between cytokinin and jasmonate (JA) signaling in soybean.

Through construction of gene co-expression network construction, GmJAZ3 was identified as a regulator of seed development and acted as a transcriptional repressor. Phenotype analysis of stable GmJAZ3-overexpression (OX) transgenic soybean plants indicated that GmJAZ3 promotes soybean plant growth, increases seed size and weight, and alters lipid and protein levels.

Further studies showed that GmJAZ3 largely inhibited the [gene expression](#) of three cytokinin oxidase gene GmCKXs. GmJAZ3 interacts with both GmRR18a and GmMYC2a to inhibit their activation on GmCKX for soybean seed size and [weight control](#). GmRR18a also directly activates GmMYC2a gene expression. The JAZ3 was selected during soybean domestication and its orthologs from other plants/crops may also control seed size and weight.

These findings define a novel molecular module for seed weight/size control and provides promising targets for [soybean](#) molecular breeding for better seed traits.

The research is published in the *Journal of Integrative Plant Biology*.

More information: Yang Hu et al, GmJAZ3 interacts with GmRR18a and GmMYC2a to regulate seed traits in soybean, *Journal of Integrative Plant Biology* (2023). [DOI: 10.1111/jipb.13494](https://doi.org/10.1111/jipb.13494)

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