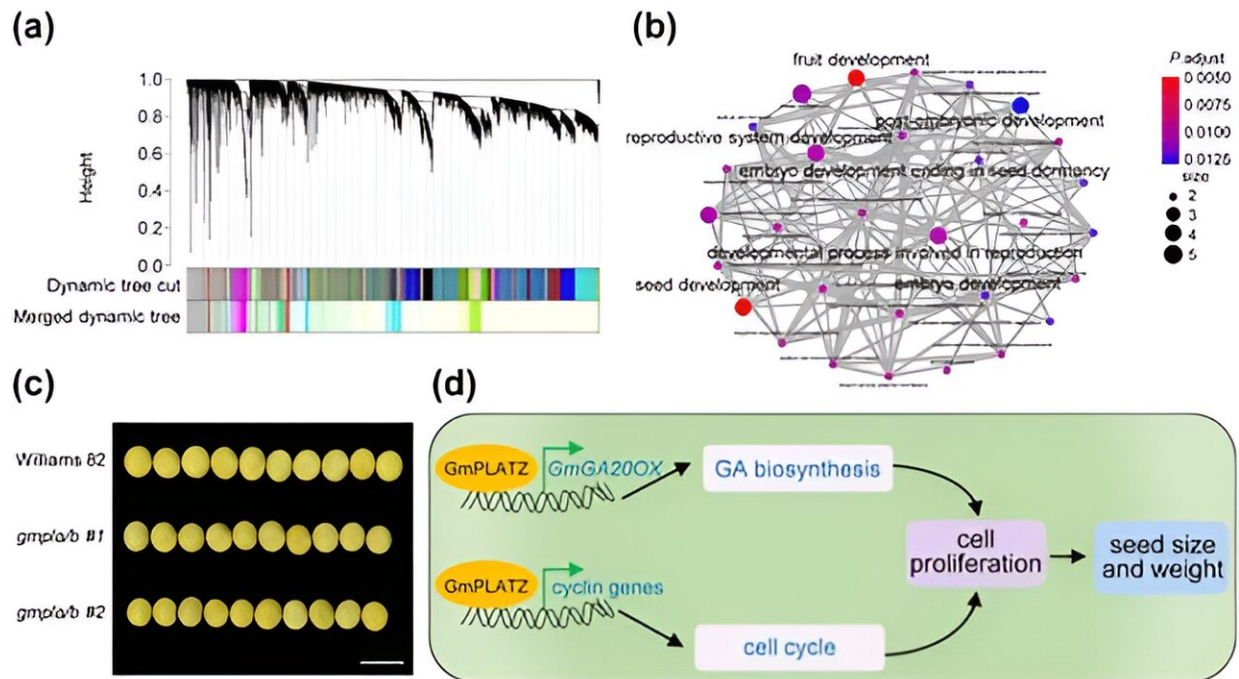


# Novel soybean regulator affects seed weight and size

October 30 2023, by Zhang Nannan



Gene identification, phenotype analyses and working model of GmPLATZ. (a) Hierarchical clustering tree based on co-expression network; (b) The GO enrichment for constantly accumulated genes; (c) Seeds from Williams 82 and *gmpla/b* mutant plants; (d) Working model of GmPLATZ in controlling seed size and weight. Credit: IGDB

Soybean (*Glycine max*) is an important economic crop that provides edible oil, vegetative protein, and other nutrients for humans. Soybean

originated and was domesticated in China. Identification of novel seed regulators through abundant accessions in China is of great importance for elucidating related regulatory networks and breeding of modern cultivars.

Researchers led by Prof. Zhang Jinsong from the Institute of Genetics and Developmental Biology (IGDB) of the Chinese Academy of Sciences have identified the regulatory factor GmPLATZ from [seed](#) transcriptomes and further found that it controls seed weight and size through the GmPLATZ-GmGA20OX/cyclins module in [soybean](#).

Their work was published in [New Phytologist](#) on October 15.

Through RNA sequencing and weight gene co-expression network analysis of 45 soybean accessions, the researchers identified 199 seed weight regulators. The transcriptomes of seven developmental stages of soybean seeds were further analyzed, and 173 developmentally related genes were detected.

They identified GmPLATZ from the two gene sets and found that it was required for promoting of seed weight and size in soybean. GmPLATZ activated the expression of six cyclin genes and GmGA20OX by binding to their promoters. A core palindromic element AATGCGCATT was essential for GmPLATZ binding. Overexpression of GmGA20OX significantly enhanced soybean seed size and weight.

The PLATZ was selected during soybean domestication, and its orthologues from Arabidopsis and rice also affected seed size and weight.

The results provide effective strategies and valuable gene targets for soybean molecular breeding.

**More information:** Yang Hu et al, Global analysis of seed transcriptomes reveals a novel PLATZ regulator for seed size and weight control in soybean, *New Phytologist* (2023). [DOI: 10.1111/nph.19316](https://doi.org/10.1111/nph.19316)

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