

A-165

Soybean GmDREBL increases lipid content in seeds of transgenic Arabidopsis

*Wanke Zhang**, State Key Lab of Plant Genomics, Institute of Genetics and

Developmental Biology, Chinese Academy of Sciences, Beijing, China

Biao Ma, State Key Lab of Plant Genomics, Institute of Genetics and Developmental

Biology, Chinese Academy of Sciences, Beijing, China

Jin-Song Zhang, Institute of Genetics and Developmental Biology, Chinese Academy of Sciences, Beijing, China

Yu-Qin Zhang, Institute of Genetics and Developmental Biology, Chinese Academy of Sciences, Beijing, China

A *DREB*-type transcription factor gene *GmDREBL* has been characterized for its functions in oil accumulation in seeds. *GmDREBL* gene is specifically expressed in soybean seeds. GmDREBL is localized in nucleus and has transcriptional activation ability. Overexpression of *GmDREBL* increased the fatty acid content in the seeds of transgenic Arabidopsis plants. GmDREBL can bind to the promoter region of *WRI1* to activate its expression. Several other genes in the fatty acid biosynthesis pathway were also enhanced in the *GmDREBL*-transgenic plants. The *GmDREBL* can be up-regulated by *GmABI3* and *GmABI5*. Additionally, overexpression of *GmDREBL* significantly promoted seed size in transgenic plants compared to that of WT plants. Expression of the *DREBL* is at higher level on the average in cultivated soybeans than that in wild soybeans. Our results demonstrate that *GmDREBL* participates in the regulation of fatty acid accumulation by controlling the expression of *WRI1* and its downstream genes, and manipulation of the gene may increase the oil contents in soybean plants. Our study provides novel insights into the function of *DREB*-type transcription factors in oil accumulation in addition to their roles in stress response.