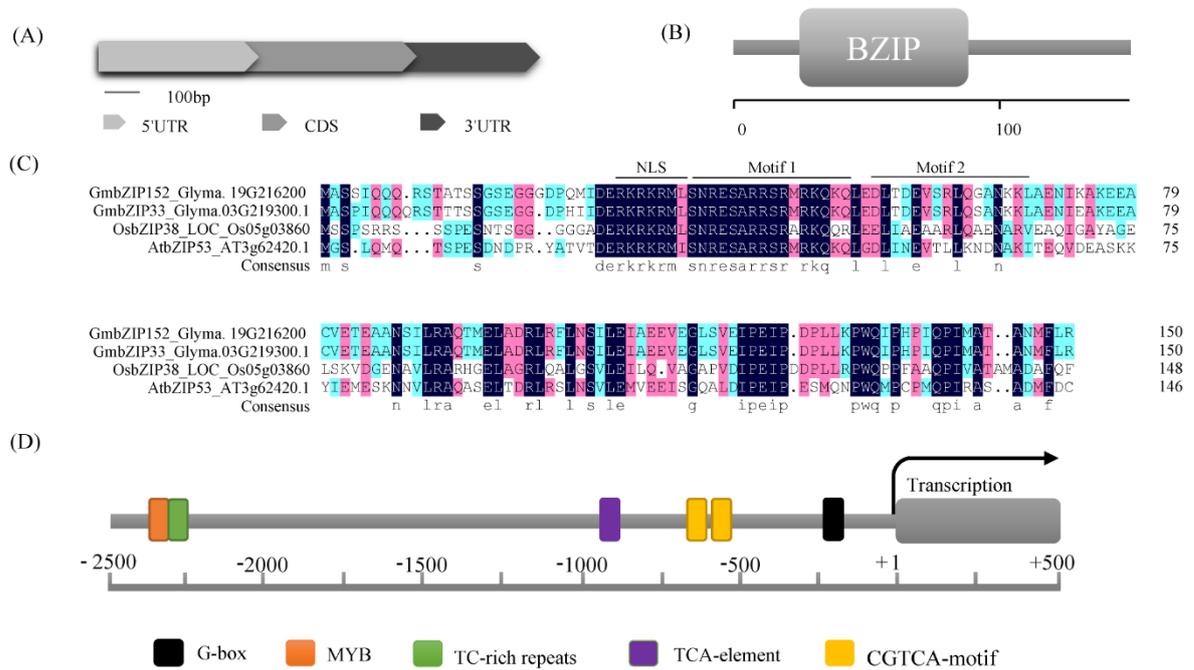


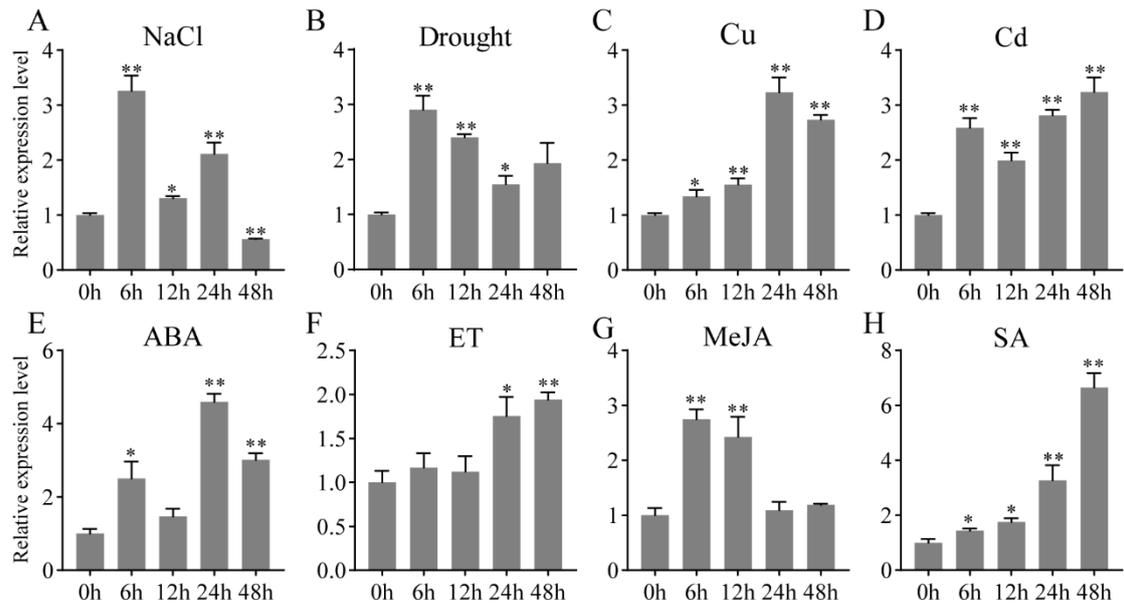
GmbZIP152, a Soybean bZIP Transcription Factor, Confers Multiple Biotic and Abiotic Stress Responses in Plant

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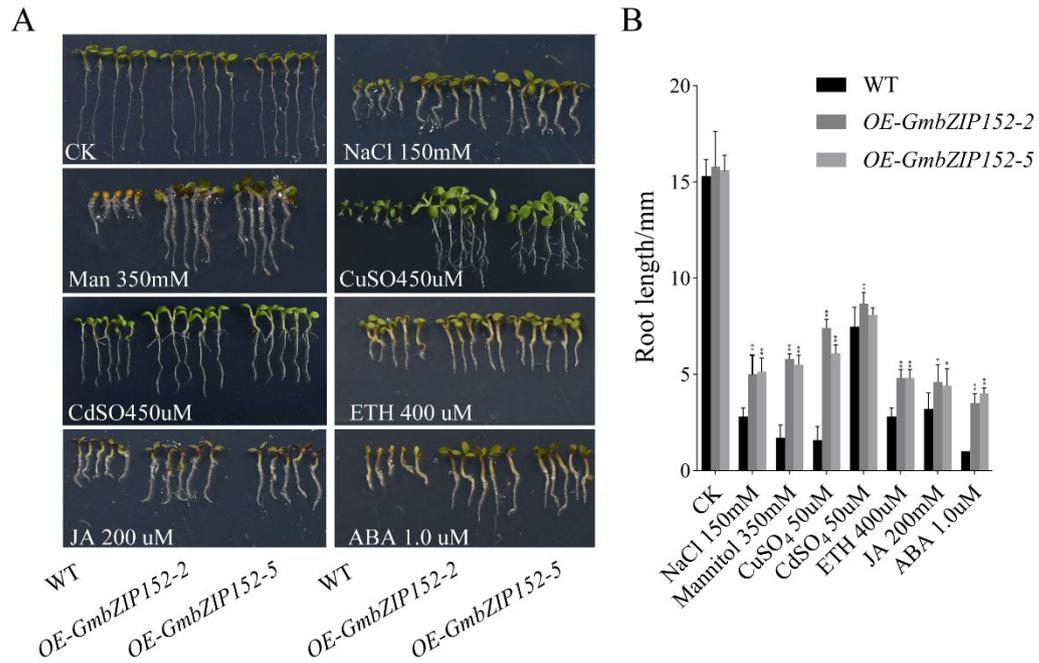
Supplemental Figures



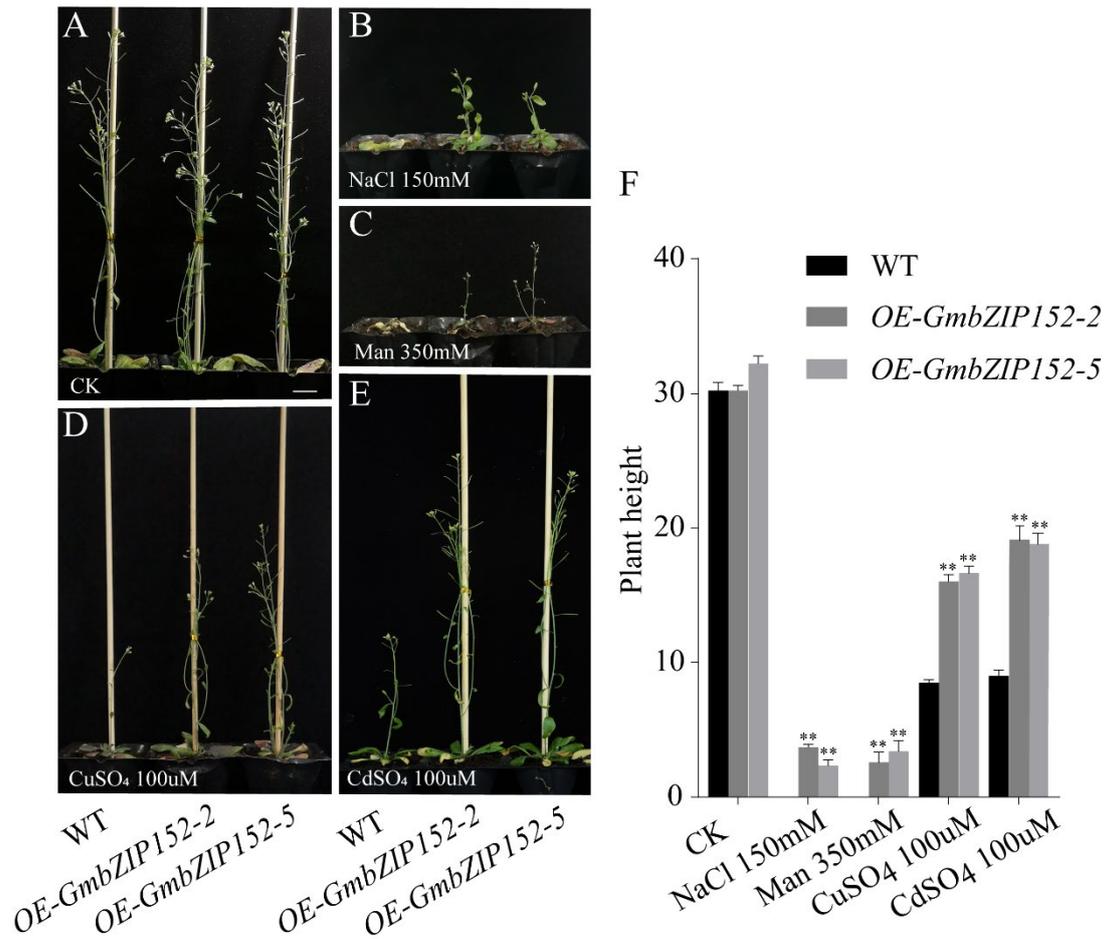
Supplemental Figure S1. Bioinformatics analysis of *GmbZIP152*. (A) The gene structure analysis. (B) The conserved bZIP domain analysis. (C) Multiple alignments of the conserved DNA-binding region and leucine zipper region between *GmbZIP33*, *OsbZIP38*, and *AtbZIP53*. (D) The stress-related cis-elements in *GmbZIP152* promoter.



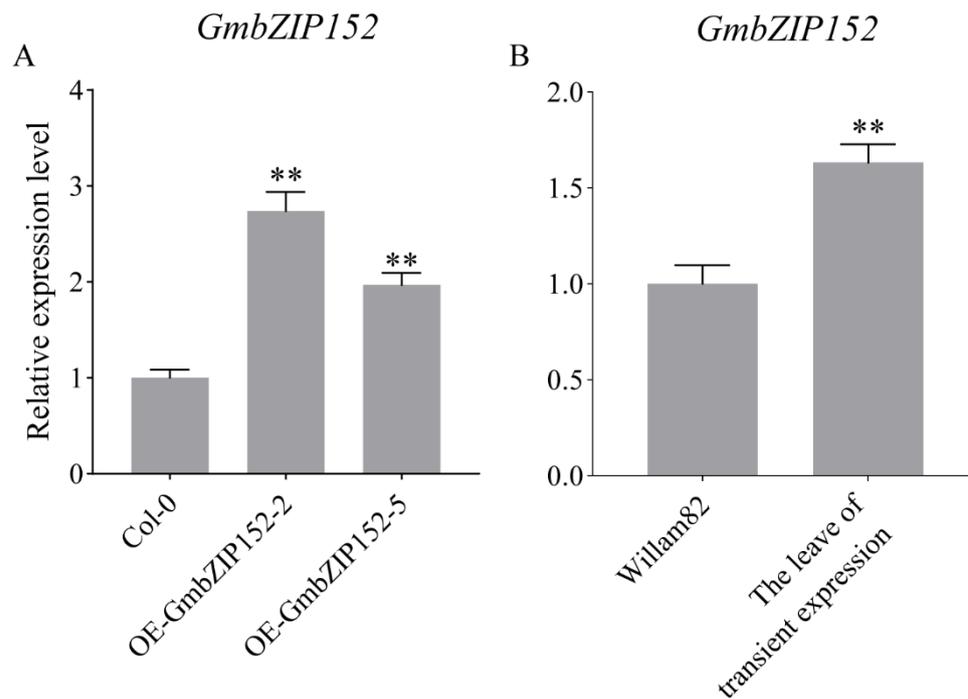
Supplemental Figure S2. Expression pattern of the *GmbZIP152* gene revealed by quantitative PCR analysis from different treatments in mature soybean. (A)-(D) *GmbZIP152* expression in response to various abiotic stress treatments (150 mM NaCl, 400 mM Mannitol, 150 μ M CuSO₄, and 150 μ M CdSO₄). (E)-(H) *GmbZIP152* expression in response to various hormone treatments [1.0 μ M Abscisic acid (ABA), 150 μ M Methyl jasmonic acid (MeJA), 400 μ M Ethylene (ETH), and 250 μ M Salicylic acid (SA)]. Errors bars indicate \pm SD of three biological replicates. Asterisks indicate significant differences for the indicated comparisons based on a Student's t-test (**p < 0.01; *p < 0.05).



Supplemental Figure S3. Phenotypic analysis of *GmbZIP152* transgenic *Arabidopsis* plants in response to salt, drought, heavy metal, plant hormones treatment in *Arabidopsis*. (A) The diagram of root length comparison (scale bar, 1 cm). (B) Calculation of the seedlings' root length. Control check (CK), Abscisic acid (ABA), Methyl jasmonic acid (MeJA), Ethylene (ETH), and Salicylic acid (SA). *GmbZIP152* transgenic *Arabidopsis* plants (*OE-GmbZIP152-2* and *OE-GmbZIP152-5*, two independent transgenic lines). Errors bars indicate \pm SD of three biological replicates. Experiments were repeated three times. Asterisks indicate significant differences for the indicated comparisons based on a Students' t-test (** $p < 0.01$; $0.01 < *p < 0.05$).



Supplemental Figure S4. Phenotypic analysis of *GmbZIP152* transgenic *Arabidopsis* plants in response to salt, drought, heavy metal, plant hormones treatment in *Arabidopsis*. (A)-(E) The diagram of root length comparison. (F) Calculation of the plant height. Control check (CK), *GmbZIP152* transgenic *Arabidopsis* plants (*OE-GmbZIP152-2* and *OE-GmbZIP152-5*, two independent transgenic lines). Errors bars indicate \pm SD of three biological replicates. Asterisks indicate significant differences for the indicated comparisons based on a Students' t-test (** $p < 0.01$; $0.01 < *p < 0.05$).



Supplemental Figure S5. Analysis of expression level of *GmbZIP152* in transgenic *Arabidopsis* plants and in the transient expression assay. (A) Relative expression level of *GmbZIP152* in Col-0, OE-*GmbZIP152-2*, and OE-*GmbZIP152-5*. (B) Relative expression level of *GmbZIP152* in William82 and the leave of transient expression. *GmbZIP152* transgenic *Arabidopsis* plants (OE-*GmbZIP152-2* and OE-*GmbZIP152-5*, two independent transgenic lines). The error bars indicate \pm SD (n=3 replicates). Asterisks indicate significant differences for the indicated comparisons based on a Student's t-test (** $p < 0.01$; * $p < 0.05$).