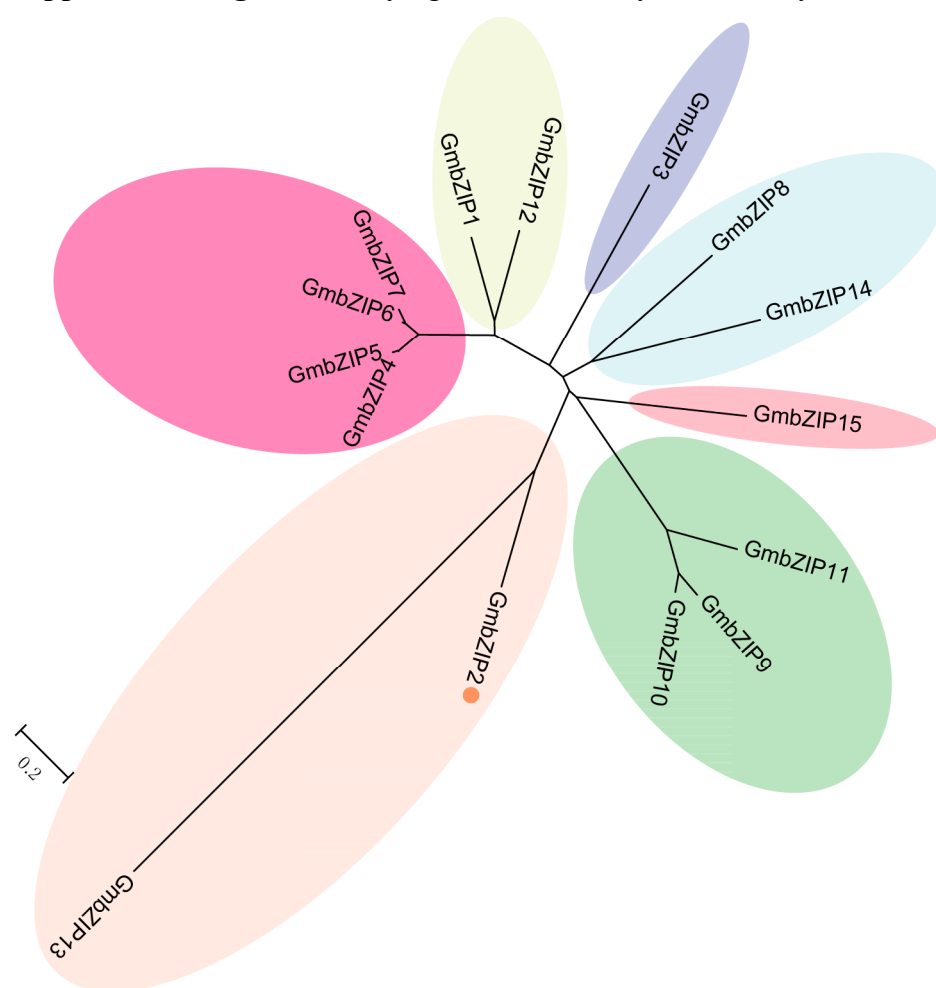
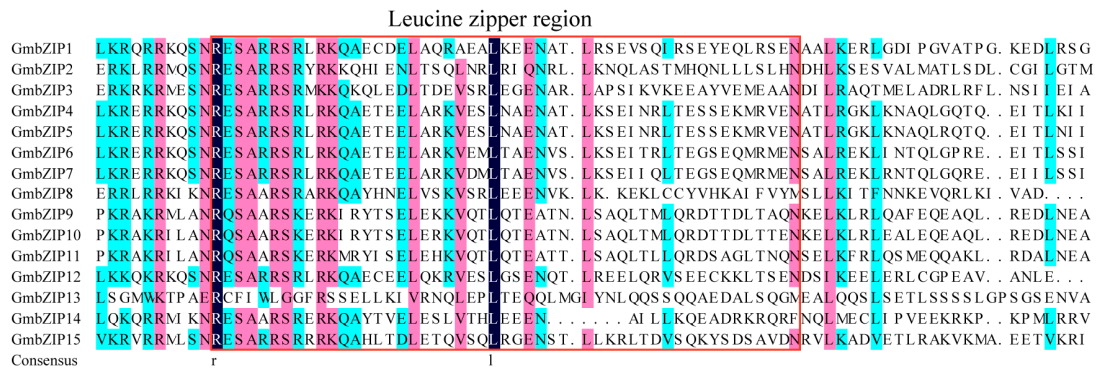


Supplemental Figure S1. Phylogenetic tree analysis of 15 soybean bZIPs.



Supplemental Figure S2. Multiple Sequence Alignment of 15 soybean bZIPs.



Supplemental Table S1. RNA-seq data analyses of 15 soybean bZIPs.

Gene	Gene ID	CK_treat-Expressi on	GH_treat-Expressi on	log2FoldChange(GH_treat/CK_tre at)	P-value
GmbZIP1	Glyma.08G265600.1	351	763	2.21661	0.00011
GmbZIP2	Glyma.06G048500.1	2	82	1.94359	0.03354
GmbZIP3	Glyma.02G012700.1	1195	10915	1.65979	5.20E-05
GmbZIP4	Glyma.03G255000.1	0.4	714	3.016	3.48E-25
GmbZIP5	Glyma.19G252600.1	433	5979	1.84171	4.13E-05
GmbZIP6	Glyma.16G029000.1	572	5630	-0.2974	0.01545
GmbZIP7	Glyma.07G060400.1	124	1339	1.56869	0.01356
GmbZIP8	Glyma.13G075000.1	52	310	1.53616	4.35E-15
GmbZIP9	Glyma.16G168400.1	105	611	2.03963	1.05E-32
GmbZIP10	Glyma.02G082800.1	301	1401	-5.8278	0.02356
GmbZIP11	Glyma.12G036400.1	1854	7022	1.16739	1.53E-17
GmbZIP12	Glyma.11G065000.1	1009	3647	2.16598	0.00957
GmbZIP13	Glyma.20G113600.1	515	1567	1.13623	2.16E-09
GmbZIP14	Glyma.08G183600.1	53	140	-0.1335	0.01786
GmbZIP15	Glyma.10G162100.1	620	1621	-0.4348	3.86E-25

Supplemental Table S2. Putative *cis*-acting elements in the 15 soybean bZIP promoters

Gene	ABRE	DRE	LTR	MYB	MYC	CGTCA-motif	TGACG-motif
GmbZIP1	4	0	0	10	16	0	0
GmbZIP2	10	2	1	5	16	1	3
GmbZIP3	1	0	2	33	10	1	5
GmbZIP4	13	0	0	14	14	2	3
GmbZIP5	2	0	0	13	8	0	2
GmbZIP6	4	0	0	12	10	1	2
GmbZIP7	15	0	0	19	14	2	3
GmbZIP8	0	2	0	9	2	0	0
GmbZIP9	2	0	1	20	30	0	0
GmbZIP10	4	3	3	29	12	1	2
GmbZIP11	3	0	2	27	4	1	1
GmbZIP12	6	0	1	24	10	0	2
GmbZIP13	0	0	1	15	8	0	0
GmbZIP14	3	1	1	14	10	0	0
GmbZIP15	0	0	1	13	22	1	1

Supplemental Table S3. Functions of elements in the 15 soybean bZIPs promoter.

Elements	Core sequence	Function
ABRE	ACGTG/CGCACGTGTC/AACCCGG	ABA- and drought-responsive element
DRE	RCCGAC	ABA- and drought-responsive element
LTR	CCGAAA	Low-temperature responsiveness element
MYB	C/TAACNA/G	Drought responsive element
MYC	CANNTG	ABA- and drought-responsive element
CGTCA-motif	CGTCA	MeJA responsiveness element
TGACG-motif	TGACG	MeJA-responsiveness element

Supplemental Table S5. Primers used for gene expression analysis and vector construction

Primer	F(5' to 3')	R(5' to 3')
GmbZIP1-qRT	CCGTACGACCTTCCCATTGT	AAGGCGAATTTGTGTCCCCA
<i>GmbZIP2</i> -qRT	GAACCTCACGAGCCAACTGA	AGGGCAACGGATTTCGGATTT
<i>GmbZIP3</i> -qRT	GATCGTCGGAGGGAGGAGAT	GCTCACTTCGTCGGTTAGGT
<i>GmbZIP4</i> -qRT	TCAGGCGAATCAGACCAACC	GTGAGGAGCGTGACCAGAAG
<i>GmbZIP5</i> -qRT	TTCAGGTATGACCACCACGC	TTTCCGCCTCTCACGTTTCA
<i>GmbZIP6</i> -qRT	GTTCCAGCGACGGAAGTGAT	AGTCTCTTTGGAAGCCGGAC
<i>GmbZIP7</i> -qRT	GGTTACAGCGACGGAAGTGA	AGTCTCTTTGGAAGCCGGAC
<i>GmbZIP8</i> -qRT	ATGCTCCCGATGCGTATGAG	ACGGGAAACCTTGCTAACCA
<i>GmbZIP9</i> -qRT	CGAGCTTCTCCTCTTCGACC	GAATCCACCGACAGACTCCG
<i>GmbZIP10</i> -qRT	AAGTTCATCGGAAAGCCGCC	CGAAGAGGAGAAGGTCGTCG
<i>GmbZIP11</i> -qRT	TCGGCATTTCGTCAGACAA	AAGCCTCTGCATCGCTTCTT
<i>GmbZIP12</i> -qRT	ATATGTGGGGAAGCCAGCAC	ACCATTCTGTGTGGTGCTCA
<i>GmbZIP13</i> -qRT	GTCGAGCAATGTGGCTGTTG	TCTCAACATGCTGGTTCCCC
<i>GmbZIP14</i> -qRT	AGACATGGCATCGTCCAAGG	GCGTCGTTTTTCGGTCAACAA
<i>GmbZIP15</i> -qRT	CGGGCCTCTCCTTTTGTGTA	CGGCCAGAAATGATCGGAGA
<i>GmbZIP2</i>	ATCTTTGCATTGTAACCAAGCC	CTCTTCCCCTACCTCGATGC
<i>GmbZIP2</i> -pCMBIA1302	GGGACTCTTG <u>ACCATG</u> ATGTTT	TCAGATCT <u>ACCCATGG</u> ATGTGA
	TTCCACCAA	AAGCATGGT
<i>Actin (U60506)</i>	ACATTGTTCTTAGTGGTGGCT	CTGTTGGAAGGTGCTGAG
<i>GmDHN15</i> -qRT	TTTTGTTTTGTTGTATTGTGTAG	GAAAAATCCTCCACCTGACGA
<i>GmWD40</i> -qRT	TGCCAGTCTCGTTAGGCTTTTC	CTTATTGAGTTGTTGTTTGGCAG
<i>GmMYB48</i> -qRT	AACAACACTCTTCAGCCAGTTT	GGGCAAAACAACTTTCCTCAT
<i>GmGST1</i> -qRT	CACAATGAGCAGCCCATAGCA	CTTCAACATTCTTCTCACGCTCT
<i>GmLEA</i> -qRT	GGTGGGTGAAACCGCACAAGA	ATGGATGCCGCCACTCCGCCAG

Supplemental Table S6. RNA-seq data analyses of 5 stress response genes.

Gene	Gene ID	CK_treat-Expressi on	GH_treat-Expressi on	log2FoldChange(GH _treat/CK_treat)	Up/Down-Re gulation
GmDHN15	Glyma.11G149900	3.62041432	46354.88544	13.64427896	up
GmWD40	Glyma.15G129100	1.33916319	3267.956744	11.25284139	up
GmMYB48	Glyma.15G041100	23.43817295	3904.360652	7.380082399	up
GmGST1	Glyma.07G139800	39.2812351	31508.76997	9.647697427	up
GmLEA	Glyma.U018200	0.34561815	82.41961276	7.897664872	up

Supplemental Table S7. The number of cis-acting elements that could be bound by basic leucine zipper (bZIP) transcription factors in 5 stress response genes promoter.

Gene	ACGT
GmDHN15	21
GmWD40	12
GmMYB48	16
GmGST1	8
GmLEA	10