

Supplementary Data

Table S1: Full strength nutrient solution used for hydroponics experiment.

Element	Chemical	Chemical Formula	Concentration of element in final nutrient solution (ppm)
N	Ammonium nitrate	NH_4NO_3	40
P	Sodium dihydrogen phosphate dihydrate	$\text{NaH}_2\text{O}_4 \cdot 2\text{H}_2\text{O}$	10
K	Potassium sulphate	K_2SO_4	40
Ca	Calcium Chloride	CaCl_2	40
Mg	Magnesium sulfate heptahydrate	$\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$	39.94
Mn	Manganese Chloride Tetrahydrate	$\text{MnCl}_2 \cdot 4\text{H}_2\text{O}$	0.52
Mo	Ammonium heptamolybdate tetrahydrate	$(\text{NH}_4)_6 \text{Mo}_7\text{O}_{24} \cdot 4\text{H}_2\text{O}$	0.05
B	Boric Acid	H_3BO_3	0.2
Cu	Copper sulfate pentahydrate	$\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$	0.01
Fe	Ferric Sodium EDTA	Fe-Na-EDTA	1.98
Zn	Zinc sulfate heptahydrate	$\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$	0.01
Si	Potassium Silicate	K_2SiO_3	1.40

Table S2: Primers used in this study.

Oligo name	Forward (5'-3')	Reverse (5'-3')
<i>Genotyping primers</i>		
Bialaphos resistance gene (<i>bar</i>)	GAAGTCCAGCTGCCAGAAAC	AAGCACGGTCAACTTCCGTA
<i>Quantitative real-time PCR</i>		
Ubiquitin-40s ribosomal protein (<i>UBQ5</i>)	ACCACTTCGACCGCCACTACT	ACGCCTAAGCCTGCTGGTT
Glutathione S-Transferease (<i>LOC_Os01g49710</i>) transcription	CCTACTTCGACAGCACGTTC	CTTCCCCTTGGAGCACTC

Supplementary Figure

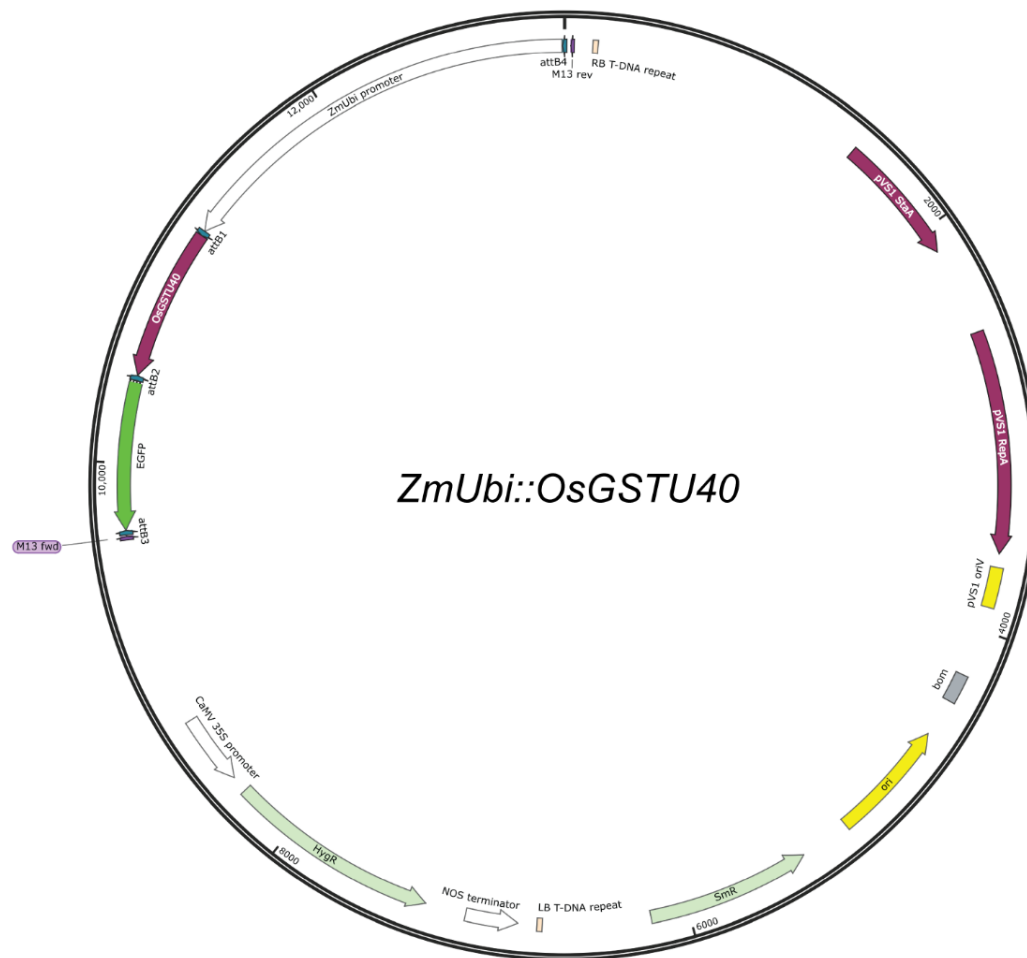


Figure S1. Map of *OsGSTU40* overexpression vector. Coding sequence of *OsGSTU40* was synthesized and cloned into a Gateway expression vector using LR clonase. *OsGSTU40* transcription was driven by a strong promoter of *ZmUbi* (maize ubiquitin).

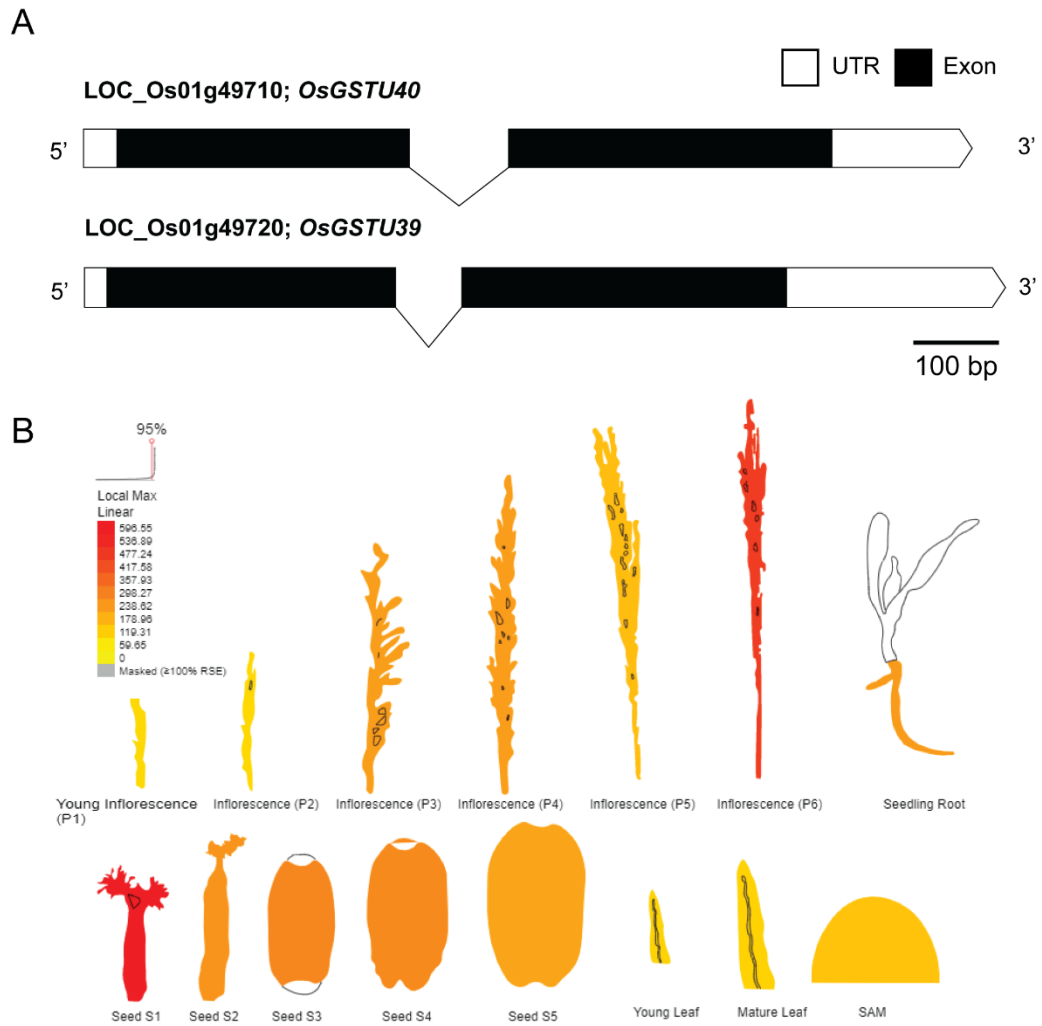


Figure S2. Gene structure (A) of *LOC_Os01g49710* (*OsGSTU40*) and *LOC_Os01g49720* (*OsGSTU39*). (B) *OsGSTU40* mRNA abundance in rice tissues. Data was obtained from the ePlant database (http://bar.utoronto.ca/eplant_rice/).

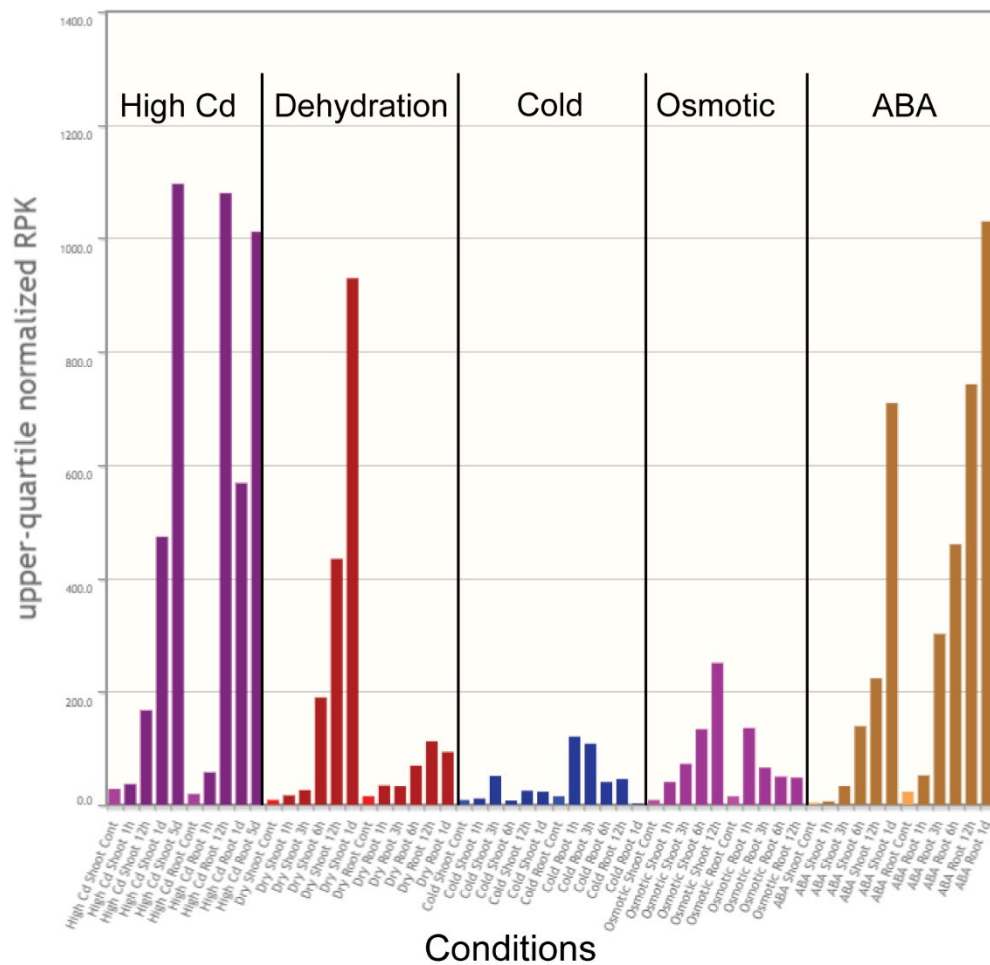


Figure S3. Responses of OsGSTU40 transcript level to different abiotic stresses and abscisic acid treatment. Data was obtained from the TENOR database (<https://tenor.dna.affrc.go.jp/EPV/Os01t0692000-01/>).

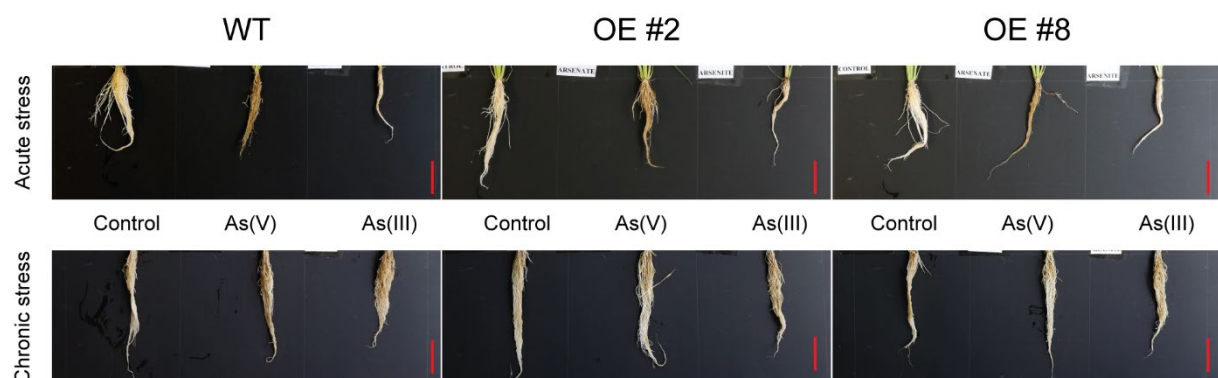


Figure S4. Phenotype of WT and OE lines in acute and chronic arsenic stress.