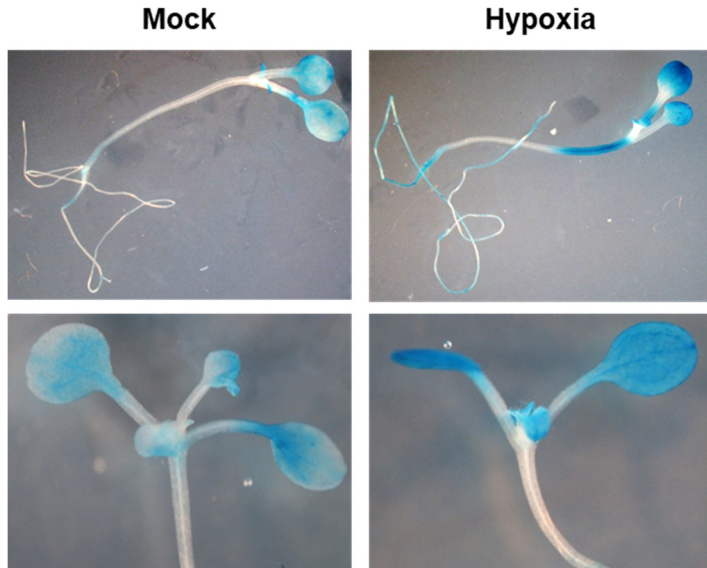
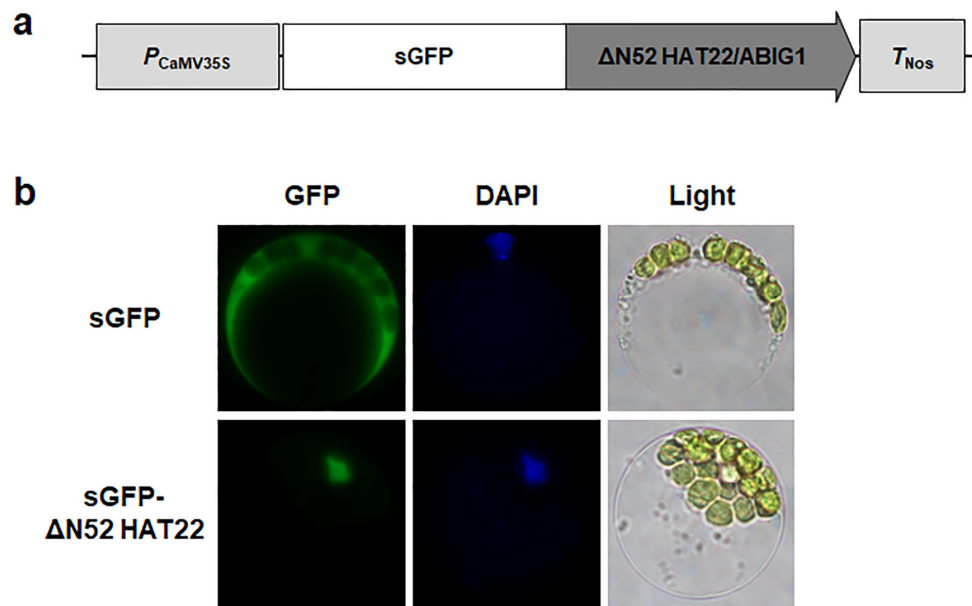


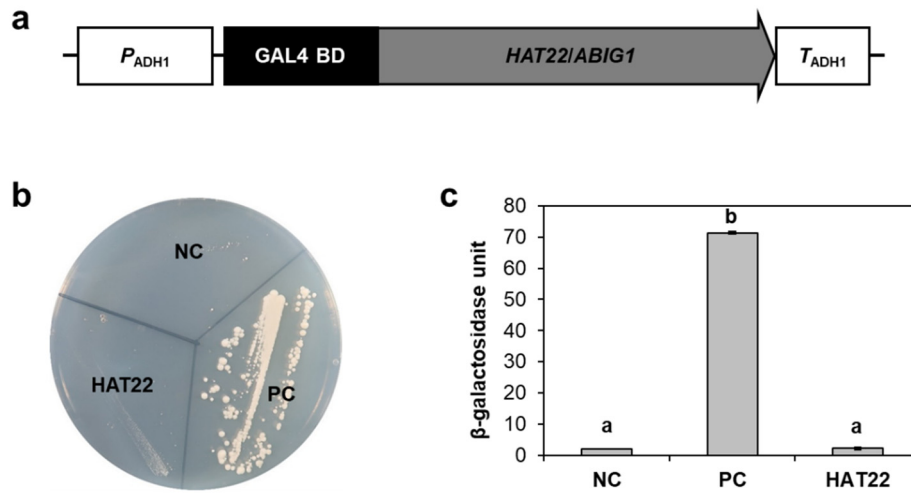
## Supplementary data



**Figure S1.** *HRE2* promoter analysis under hypoxic condition. Histochemical GUS assay for Arabidopsis T<sub>2</sub> transgenic plants carrying the -180 of *HRE2* promoter at 12 DAG under hypoxic condition. Hypoxia was induced using 99.9% N<sub>2</sub> gas for 12 h. GUS activity was observed in at least 15 transgenic plants; representative staining results are shown here.



**Figure S2.** Subcellular localization of  $\Delta$ N52 HAT22/ABIG1. **(a)** A schematic map of sGFP-fused  $\Delta$ N52 HAT22/ABIG1 vector. **(b)** Transient expression of sGFP- $\Delta$ N52 HAT22/ABIG1 fusion protein in Arabidopsis protoplasts. Left, GFP signal; middle, DAPI staining; right, light microscopy images.



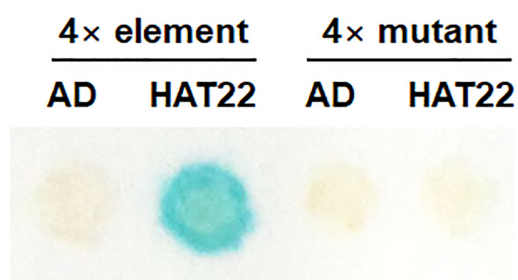
**Figure S3.** Transactivation activity of HAT22/ABIG1. **(a)** A schematic map of GAL4 BD-fusion HAT22/ABIG1 vector for the analysis of transactivation activity in yeast. **(b)** Yeast growth assay. Yeast transformants were grown on SM-Trp/-Ura. **(c)** Quantitative  $\beta$ -galactosidase ONPG assay.  $\beta$ -Galactosidase activities were used for transactivation activity quantification. Data are shown as means  $\pm$  S.D. ( $n = 3$ ). Different letters display significant differences ( $P < 0.05$ ). In **(b)** and **(c)**, empty pBD-GAL4 vector and HRE1 were used for the negative and positive controls, respectively.

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      5' -AGTATT
-110 TGATGTGGGA
-100 GTAGAAATAA
-90  TTAAGAAAGC
-80  GTTATGGTTC
-70  AAATGATAAC
-60  TGCAAATTCT
-50  ATGATTAATT
-40  AACTTATTAT
-30  TATTTATAAG
-20  TTGTTAATGG
-10  TAGTTGCA-3'

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**Figure S4.** Identification of HD-Zip II-binding-like *cis*-regulatory element(s) in *HRE2* promoter. Sequence of hypoxia- and salt-responsive region of *HRE2* promoter from -116 to -2 region is presented. The core sequence of HD-Zip II-binding-like *cis*-regulatory element, AATGATA, is marked in red and underline.



**Figure S5.** Confirmation of binding of HAT22/ABIG1 to HD-Zip II-binding-like *cis*-regulatory element in yeast. Yeast one-hybrid assay for HAT22/ABIG1 and HD-Zip II-binding-like *cis*-regulatory element or mutant HD-Zip II-binding-like *cis*-regulatory element using  $\beta$ -galactosidase filter assay. 5-bromo-4-chloro-3-indolyl- $\beta$ -D-galactopyranoside was used as the substrate. The reaction was performed for 6 h.

**Table S1.** Yeast one-hybrid screening. Results of yeast one-hybrid screens using -116 to -2 region of *HRE2* as bait and hypoxia-treated Arabidopsis cDNA library as prey.

<b>Total no. of transformants</b>	<b>No. of positive colonies</b>	<b>No. of isolated genes</b>
$8.8 \times 10^5$	25 colonies	13 genes

**Table S2.** List of genes isolated from yeast one-hybrid screening

Locus ID	Gene	No. of selected yeast colonies	Description
At5g53980	HB52	1	HD-Zip TF family, class I subfamily
At4g37790	HAT22/ABIG1	1	HD-Zip TF family, class II subfamily, subgroup $\beta$
At5g47370	HAT2	1	HD-Zip TF family, class II subfamily, subgroup $\gamma$
At4g16780	HAT4/HB2/HB-2	1	HD-Zip TF family, class II subfamily, subgroup $\gamma$
At3g60390	HAT3	3	HD-Zip TF family, class II subfamily, subgroup $\delta$
At2g44910	HB4/HB-4	1	HD-Zip TF family, class II subfamily, subgroup $\delta$
At2g18350	HB24/ZHD6/ZFHD6	2	ZF-HD
At5g65410	HB25/ZHD1/ZFHD2	1	ZF-HD
At1g75240	HB33/ZHD5	10	ZF-HD
At1g09200	H3.1/HTR2	1	Histone superfamily protein
At4g40040	H3.3/HTR5	1	Histone superfamily protein
At5g10980	H3.3/HTR8	1	Histone superfamily protein
At1g76110	At1g76110	1	HMG box protein with ARID/BRIGHT DNA-binding domain-containing protein

**Table S3.** List of primers for cloning

Construct	Forward	Reverse
<i>HRE2</i> promoter -180	5'-GCGAAGCTTTTAGAT AAATTAACATAAAC-3'	5'-GCGCTGCAGTTTTGT TTTTGTTTTTTAC-3'
<i>HRE2</i> promoter -116	5'-GCGAAGCTTAGTATT TGATGTGGGAGTAG-3'	5'-GCGCTGCAGTTTTGT TTTTGTTTTTTAC-3'
<i>HRE2</i> promoter -2	5'-GCGAAGCTTAAAGGT TATAGAGCACACAG-3'	5'-GCGCTGCAGTTTTGT TTTTGTTTTTTAC-3'
<i>HRE2</i> promoter +52	5'-GCGAAGCTTGAAGAA CTTGGTCGTCAAGC-3'	5'-GCGCTGCAGTTTTGT TTTTGTTTTTTAC-3'
<i>HRE2</i> promoter -116 to -2	5'-CGCGTCGACAGTATT TGATGTGGGAGTAG-3'	5'-CGCGAATTCGCAACT ACCATTAACAACCTT-3'
HAT22/ABIG1 OX	5'-CGCGTCGACATGGGT CTTGATGATTCATG-3'	5'-ATACCCGGGCTAACA TGCTGCAGAAGGAT-3'
$\Delta$ N52 HAT22/ABIG1 OX	5'-CGCGTCGACATGGAGA GCTACAAGATCAAGAC-3'	5'-ATACCCGGGCTAACA TGCTGCAGAAGGAT-3'
GAL4 AD- HAT22/ABIG1	5'-CGCGAATTCATGGGT CTTGATGATTCATG-3'	5'-GCAGGATCCCTAACA TGCTGCAGAAGGAT-3'
GAL4 BD- HAT22/ABIG1	5'-CGCGAATTCATGGGT CTTGATGATTCATG-3'	5'-GTGGTCGACCTAACA TGCTGCAGAAGGAT-3'
sGFP-HAT22/ABIG1	5'-CGCGTCGACATGGGT CTTGATGATTCATG-3'	5'-ATACCCGGGCTAACA TGCTGCAGAAGGAT-3'
sGFP- $\Delta$ N52 HAT22/ABIG1	5'-CGCGTCGACATGGAGA GCTACAAGATCAAGAC-3'	5'-ATACCCGGGCTAACA TGCTGCAGAAGGAT-3'



**Table S4.** List of primers for quantitative RT-PCR

Gene	Forward	Reverse
<i>GAPc</i>	5'-GTGTCCCAACCGTTGATGTC-3'	5'-TCCCTTGAGTTTGCCTTCGG-3'
<i>HAT22/ABIG1</i>	5'-GGTGTGTTCGAGAGTGAGTG-3'	5'-GTTATCTTCGAGAAGAGCAG-3'
<i>RD29A</i>	5'-CCTGAAGTGATCGATGCACC-3'	5'-CAGTGGGTTTGGTGTAATCG-3'
<i>ADHI</i>	5'-TGAATGTGGCTAAACCCAAG-3'	5'-CCTAGAAGCACCAGCGATTC-3'