

Supplemental Figure

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+ AGAGAGTGAG AATTGGCAAT CCATGTTTTA GGTAACGTCT AAATCTCTTG GAACCATTGG GGTTTACAAG
- TCTCTCACTC TTAACCGTTA GGTACAAAAT CCATTGCAGA TTTAGAGAAC CTTGGTAACC CCAAAATGTT

+ TCTTACTAGC TCACGAACCT AGCCACTTGG GATATCGTGT AACCCGCAGG TCATGATTTA AGAGACAGTG
- AGAATGATCG AGTGCTTGAA TCGGTGAACC CTATAGCACA TTGGGCGTCC AGTACTAAAT TCTCTGTCAC
Myc
+ AAAGCTGAGA AAAGGAAGGG ACCGTTTCAA AGTGATCTTC TGTGGATAAC TTTGTGAACA AGGTTTCTTT
- TTTGCACTCT TTTCTTCCC TGGCAAAGTT TCACTAGAAG ACACCTATTG AAACACTTGT TCCAAAAGAA

+ AATAGATCCT TTTTTCGTGA GTTGATATAT ATTCCAACT GATCCATAAA TCCATCCAAT CCTCATCCCC
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+ CAAAAAGAAA ATAGTATAAA CATAGAAAAA CGAAAACATA TCAGACTTTG GGCTTTTCGT ATGGTTTAGT
- GTTTTCTTTT TATCATATTT GTATCTTTTT GCTTTTGAT AGTCTGAAAC CCGAAAAGCA TACCAATCA
MYC MYC ARE
+ TTTTGGCTTT TTGCTGTGTT GTTCTATTTT AGAAAGTAAA CATGTGAAAC GGTTCAATTT TAATCCATGA
- AAAACCGAAA AACGACACAA CAAGATAAAG TCTTTCATTT GTACACTTTG CCAAGTAAAC ATTAGGTACT

+ AAGGATTCTT TATGTTACTG CTGTTGCTTC ATTGAGTAGA TACGAATCGA GAATGCCTTT TTTCTTGTGTT
- TTCCTAAGAA ATACATGAC GACAACGAAG TAACTCATCT ATGCTTAGCT CTTACGGAAA AAAGGAACAA
ABRE MYB
+ TCCGACAATT ATCGATTG AC GTGTGACCAC TTTAAAAGTT TAAACAGCTC GACTTTCCAA TATGGGTTTA
- AGGCTGTAA TAGCTAATG CACACTGGTG AAATTTTCAA ATTTGTCGAG CTGAAAGGTT ATACCCAAT
G-box
+ TTTCTTGTGTT TATCCACACC ATTAAAGAAT GGTTTTGGG ATTTTATTT ATGTGATAAT TAATCATTTT
- AAAGAACAAA ATAGGTGTGG TAATTCTTA CAAAAACC TAAAAATAA TACACTATTA ATTAGTAAAA
ARE
+ TCCAAATTTT ATTTTGTATA TAATAATGA AGCAAATGTT GGAAACTAT CCAATGGATG TGGTGGGTTA
- AGGTTTAAA TAAACATAT ATTATTACT TCGTTTACAA CCTTTGATA GGTACCTAC ACCACCCAAT
MYC
+ ATATCACCAG ATTCGCATAG CTGGTTTTTG ACTTGTCTTC TTAATTATTT GTCCAGAAAA AGAGAAGAAC
- TATAGTGGT TAAGCGTATC GACCAAAAC TGAACAGAAG AATTAATAAA CAGGTCTTT TCTCTCTTG
ARE
+ TCTTCACATC ATCATTGTCA ACTTTAGCAT TATGTATTA GCTTTTATT TCTTTACGTC TACAAAGCTA
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+ TTGGTACAAC GTTCTAAAAT CAAATTCGTC ATCAGTAGAT TTTGTAACT AATTAAGTAA AGTTCAGTGA
- AACCATGTTG CAAGATTTTA GTTTAAGCAG TAGTCATCTA AAACATTGA TTAATTCATT TCAAGTCACT
ABRE
+ TTAAAGAAGC TAGATGAAGA ACGTTGCAA CGACTCCTCT GAGATCTACA CGGAATAATG TCGTCAGTGA
- AATTCTTCG ATCTACTTCT TGCACACGTT GCTGAGGAGA CTCTAGATGT GCCTTATTAC AGCAGTCACT
G-box G-box G-box
+ GCAAACAAC CCCATCACGT CGTCCCTCCA CCTGTCTCTC CTTCTCCTTC CTGCTTGTG TTTCTCTCTC
- CGTTTGTGA GGGTATGCA GCAGGGAGGT GGACAGGAGA GAAGAGGAAG GAACGAACAG AAAGAGAGAG
ABRE
+ AAATCATTTT ACCTAAAAAT AATAAATATC TTTCTTTTTC TAAAGAAAAA AAAAAAAAAA ACTTTTCAAA
- TTTAGTAAAG TGGATTTTTA TTATTATAG AAAGCAAAAG ATTTCTTTT TTTTTTTTTT TGAAAAGTTT

+ TTCATCTTTG GTTCTGTCAG CAGCAACAAC AACCGAGCCC TGTTCTGTTAG GGTTTTCGGT TTTTGTAGC
- AAGTAGAAAC CAAAGACGTC GTCGTTGTTG TTGGCTCGGG ACAAGCAATC CCAAAAGCCA AAAACAATCG
ARE G-Box
+ TTTTCTTCTT CTTCTCTTTC GTTTCCTTCC ACCTGAATTG TTGTAAC ATG (The start of the coding region)
- AAAAGAAGAA GAAGAAGAAG CAAAGGAAG TGGACTTAAC AACATTG AtPLDδ

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Figure S1. Promoter sequence analysis of *Arabidopsis thaliana* AtPLD δ . The *Arabidopsis thaliana* AtPLD δ promoter was amplified by PCR, and the primer sequences used for AtPLD δ promoter isolation are shown in Supplemental Table S1. The 1,237-bp DNA sequence was analyzed using the PLACE and Plant-CARE databases. The predicted cis-acting elements are as follows: ARE (cis-acting regulatory element essential for the anaerobic induction), ABRE motif (cis-acting element involved in the abscisic acid responsiveness), MYC (cis-acting element in response to drought and ABA), G-box (cis-regulatory element involved in light response). ATG: start codon of the AtPLD δ gene. Different colors represent the predicted cis-acting elements in the promoter region.

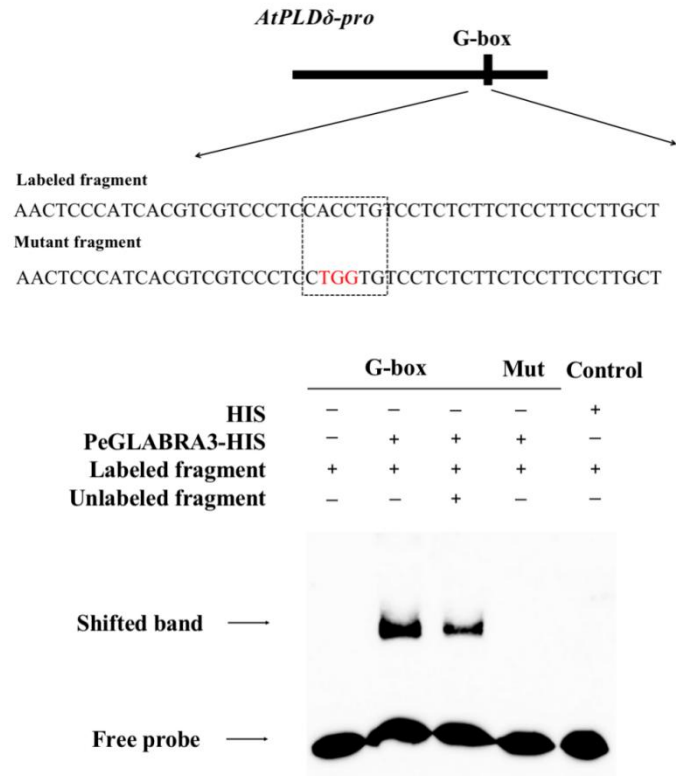


Figure S2. Electrophoretic mobility shift assay (EMSA) verified the interaction of PeGLABRA3 with the *AtPLDδ* promoter region. PeGLABRA3-HIS protein purified from prokaryotic expression was used for in vitro EMSA, while HIS protein was used as a negative control. The mutant probes (Mut, CACCTG to CTGGTG) were used to confirm the binding specificity of G-box to PeGLABRA3. The bases marked in red indicate the mutated bases in the mutant probe. In each panel, “+” and “-” indicate the presence or absence of protein and probe in the loading mixture, respectively. The cold probe concentration was 10× and the concentration of the polyacrylamide gel was 6%. The EMSA experiment was repeated three times and representative images are shown.

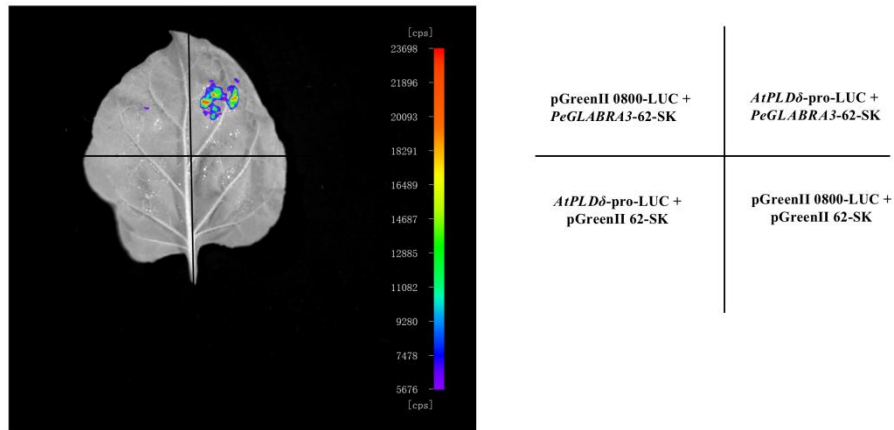


Figure S3. The luciferase reporter assay (LRA) validated the *PeGLABRA3* interaction with *AtPLDδ* promoter. *Nicotiana tabacum* leaves were co-transformed with *Agrobacterium* strains containing (1) *PeGLABRA3*-62-SK + pGreenII 0800-LUC, (2) *PeGLABRA3*-62-SK + *AtPLDδ*-pro-LUC, (3) *AtPLDδ*-pro-LUC + pGreenII 62-SK, and (4) pGreenII 0800-LUC + pGreenII 62-SK. The LRA was repeated three times and representative luciferin luminescence images are shown.

Table S1. Primers used in this study.

Gene	Primers
<i>AtSOD</i>	5'-AGGAAACATCACTGTTGGAGAT-3' 5'-GAGTTTGGTCCAGTAGAGGGAA-3'
<i>AtPOD</i>	5'-CGTGCCCTTCATATTGTTGG-3' 5'-GACGCCATCAACAACGAGTC-3'
<i>AtCAT</i>	5'-AATATGCTGACGATGAGGATGC-3' 5'-CAAGAATCAAGGAGGTAGGAGATG-3'
<i>AtSOS1</i>	5'-GTGAAGCAATCAAGCGGAAA-3' 5'-TGCGAAGAAGGCGTAGAACA-3'
<i>AtSOS2</i>	5'-GGGCAGTTATGTAGCGGAGA-3' 5'-TTTCACCAGCAGCCTTTCTT-3'
<i>AtACTIN2</i>	5'-GGTAACATTGTGCTCAGTGGTGG-3' 5'-AACGACCTTAATCTTCATGCTGC-3'
<i>AtPLDδ</i>	5'-GTAGCTGCTAAAGCTTACGA-3' 5'-AAAGAACAACAACAATGG-3'
<i>AtPLDδ promoter</i>	5'-AAGAGAGTGAGAATTGGCAATCCATG-3' 5'-GGTTACAACAATTCAGGTGGAAGGAA-3'
<i>PePLDδ</i>	5'-TGATGGGCCAGCTGCATATGAT-3' 5'-AGGTGGAACCTATTGTGGTTCCATCC-3'
<i>PePLDδ promoter</i>	5'-TAAAAATAATATTTTTATTTTTT-3' 5'-TTTATTGGGCGGGATTTTTCAGAG-3'
<i>PeGLABRA3</i>	5'-GACAAAGAGCTTGCATGTGCCAC-3' 5'-CAAACCTTGCATTTGGAAGCTCC-3'
<i>PeACT7</i>	5'-ATTGGCCTTGGGGTTAAGAG-3' 5'-CACACTGGAGTGATGGTTGG-3'

Table S2. Accession numbers of GLABRA3 orthologs used in multiple sequence alignment and phylogenetic analysis.

Sequence name	Accession number
AtGLABRA3	NP_680372.1
NtGLABRA3	NP_001313104.1
PeGLABRA3	XP_011029287.1
PtGLABRA3	XP_024445100.1
GmGLABRA3	XP_003532789.1
OsGLABRA3	XP_015616671.1