

Supplementary figures

Figure S1

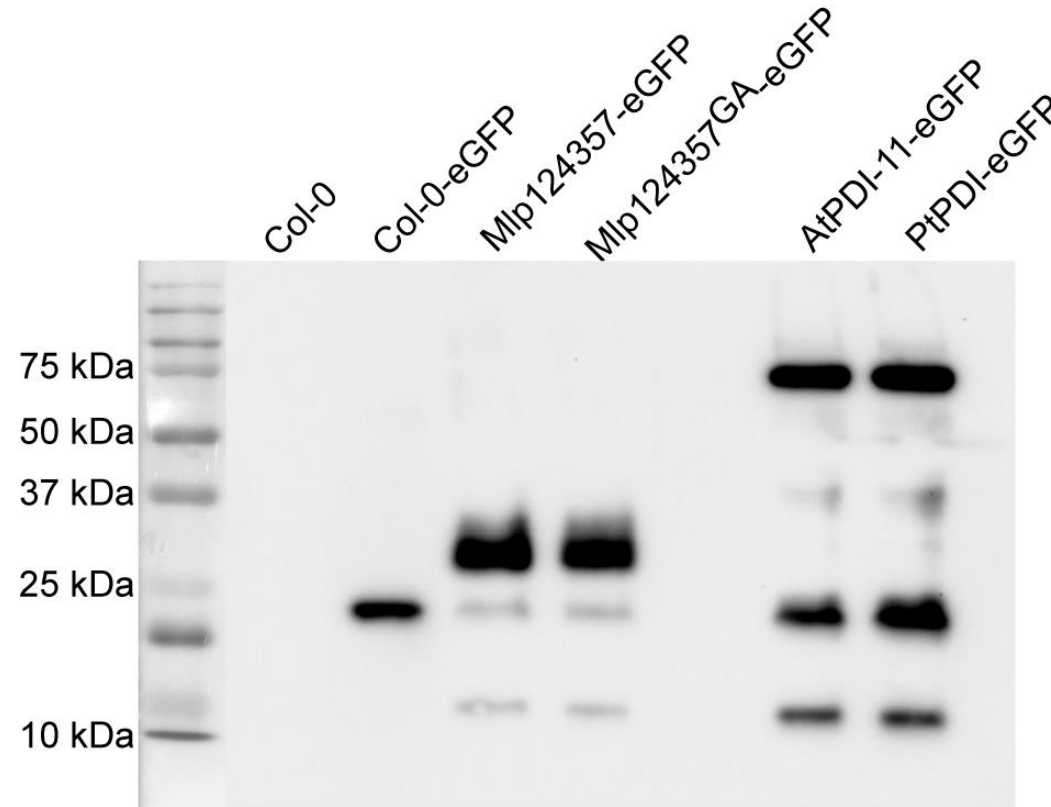


Figure S1. Immunodetection of eGFP protein in wild-type (Col-0) and stable transgenic seedlings expressing GFP, Mlp124357-eGFP, Mlp124357^{GA}-eGFP, AtPDI-11-eGFP or PtPDI-eGFP from 14 days old plantlets.

Figure S2

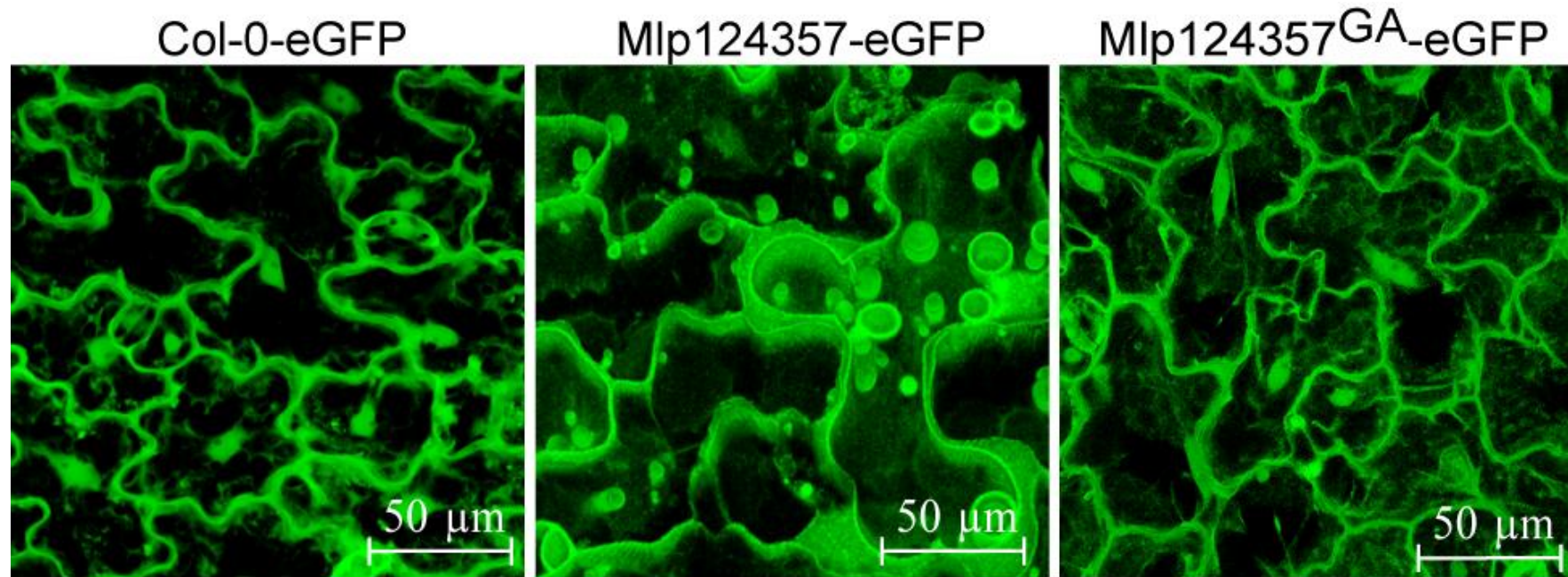


Figure S2. Mlp124357^{GA} loses tonoplast localization in stable *Arabidopsis* transgenic line. Live-cell imaging of leaf epidermal cells of seven-day-old stable *Arabidopsis* eGFP, Mlp124357-eGFP or Mlp124357^{GA}-eGFP transgenic line.

Figure S3

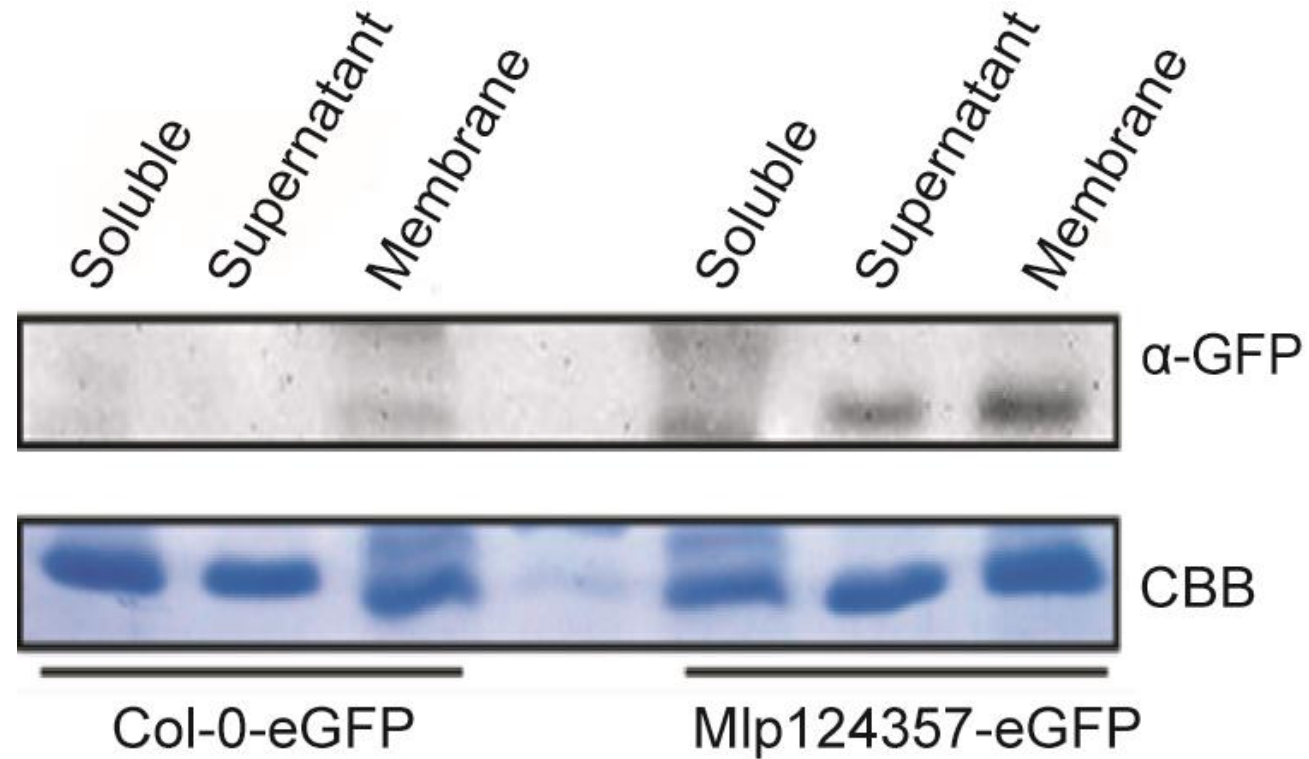


Figure S3. Distribution of Mlp124357-eGFP proteins in subcellular fractions. Cellular membrane fractions were obtained from fresh leaves of 3-week-old Col-0-eGFP and Mlp124357-eGFP plants by differential centrifugation and Mlp124357 was detected by Western hybridization with an antibody recognizing GFP .

Figure S4.

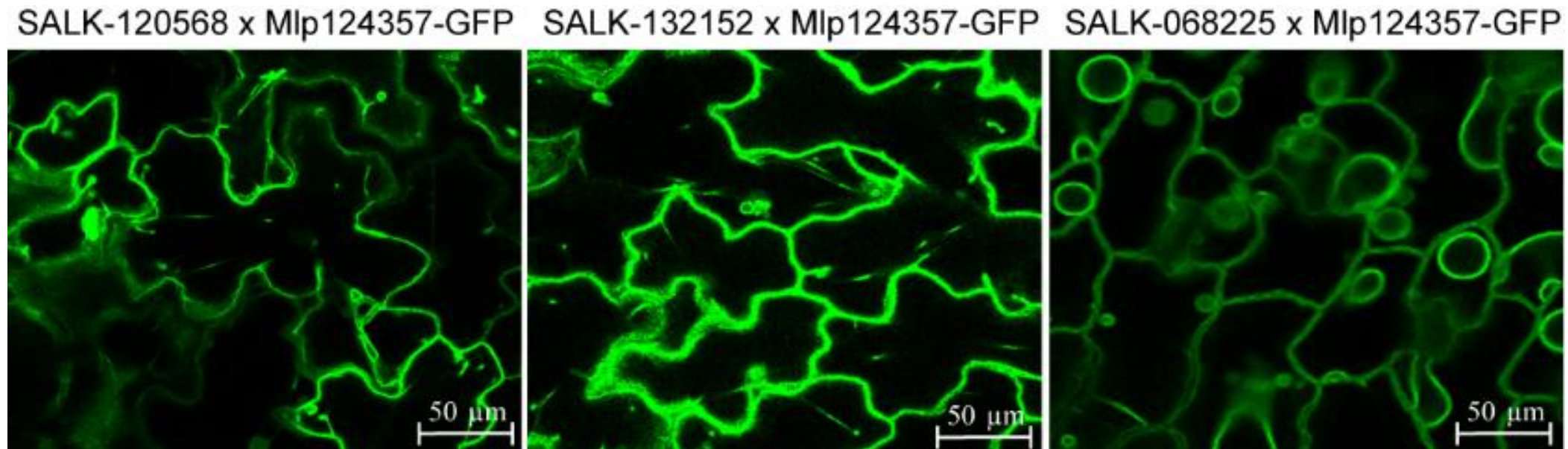


Figure S4. Mlp124357 tonoplast, bulbs, and TVSs localization does not change in the absence of AT2G33210, AT5G15650, and AT1G04040 genes in *Arabidopsis*. Live-cell imaging of leaf epidermal cells of the crossed lines between Mlp124357-eGFP with the indicated genes knock-out lines; SALK-120568, SALK-132152 or SALK-068225.

Figure S5

MlpPDI	---MKSILVTLITILLFITTTNAGIFNSKGDVKAIDIDRLKKHLKTSSKGTFFVAFYAPWC	57
AtPDI-11	-MAKSQIWFGFALLALLV-----SAVADDVVVLTDSEFEK-EVGKDKGALVEFYAPWC	52
PtPDI	MERCNQIWYAFGMTALLAV-----SALADDVVVLTEDNFEK-EVGQDKGALVEFYAPWC	53
	..* : : *: . ** : * : * ..*: * *****	
MlpPDI	GHCKSLQPEFEKAATNVKNL--VVFAAVDCDADQNKASCGRDYGKGFPTIKYFPGTPVA	115
AtPDI-11	GHCKKLAPEYEKLGASFKKAKSVLIAKVDCDEQ--K SVC-TKYGVSGYPTIQWFPKGSLE	109
PtPDI	GHCKKLAPEYEKLGSSFKKAKAVLIGKVDCDEH--KGVC-SKYGVSGYPTLQWFPKGSLE	110
	****.* **.*. . . . * : : . * . * . * . * . * . * . * . * . *	
MlpPDI	-MDYDQERKAKSMVDYSLRFMPTFAKK-----IKSKKDLQEKISKSSNDRPLVVLFT-	166
AtPDI-11	PQKYEGPRNAEALAEYVNKEGGTNVKLAAVPQNVVVLTPDNFDEIVLDQNKDVLVEFYAP	169
PtPDI	PKKYEGPRTAEALAEFVNNEGGSNVKIAAVTSSVVVLADNFNDIVLDENKDVLEFYAP	170
	. * : * . * : : : . : . * : . * : * . * . * . * : :	
MlpPDI	---TATATTPTFKSLSSVFHKKMEVYTATPKAIGEETAKELFSMESIPGLIVFK-GNTDY	222
AtPDI-11	WCGHCKSLAPTYEKVATVFKQEEGVVIANLDADAHKALGEKYGVSGFPTLKFFPKDNKAG	229
PtPDI	WCGHCKNLAPIYEKVATAFKSEEDVVVANLEADKYRDLAEKYGVSGFPTLKFFPKGNKAG	230
	.. : * : : : . * : : * * . * . * : : : * * . * . *	
MlpPDI	EKFKGKMNYNTLYEFIKKELQLAEKSKSENQKA-----KDEL-----	259
AtPDI-11	HDYDGGRLDDFVFSFINEKSGTSRDSKGQLTSKAGIVESLDALVKELVAASEDEKKAVLS	289
PtPDI	EEYEGGRDLDDFVAFINEKAGTSRDGKGQLTSKAGIVESLDALVKEFVAAGDDEKKAVFS	290
	...* : : : ** : : : * *	
MlpPDI	-----	259
AtPDI-11	RIEEEASTLKGSTTRYGKLYLKLAKSYIEKGS DYASKETERLGRVLGKSI SPVKADELTL	349
PtPDI	RIEEEVEKLKGSTARHGKIYLLKAAKTCMVKGAGYAKNEIERLQRMLEKSI SPAKADEFTL	350
MlpPDI	-----	259
AtPDI-11	KRNILTTFVASS	361
PtPDI	KKNILSTFA---	359

Figure S5. Multiple sequence alignment of PDIs. The amino acid sequence of AtPDI-11, PtPDI, and *Mlp*PDI was compared. Identical/highly conserved residues (*); semi conserved residues (:); and conserved residues (.) are marked. The AtPDI-11 shows 87% and 30% of sequence identity with PtPDI and *Mlp*PDI, respectively.

Figure S6

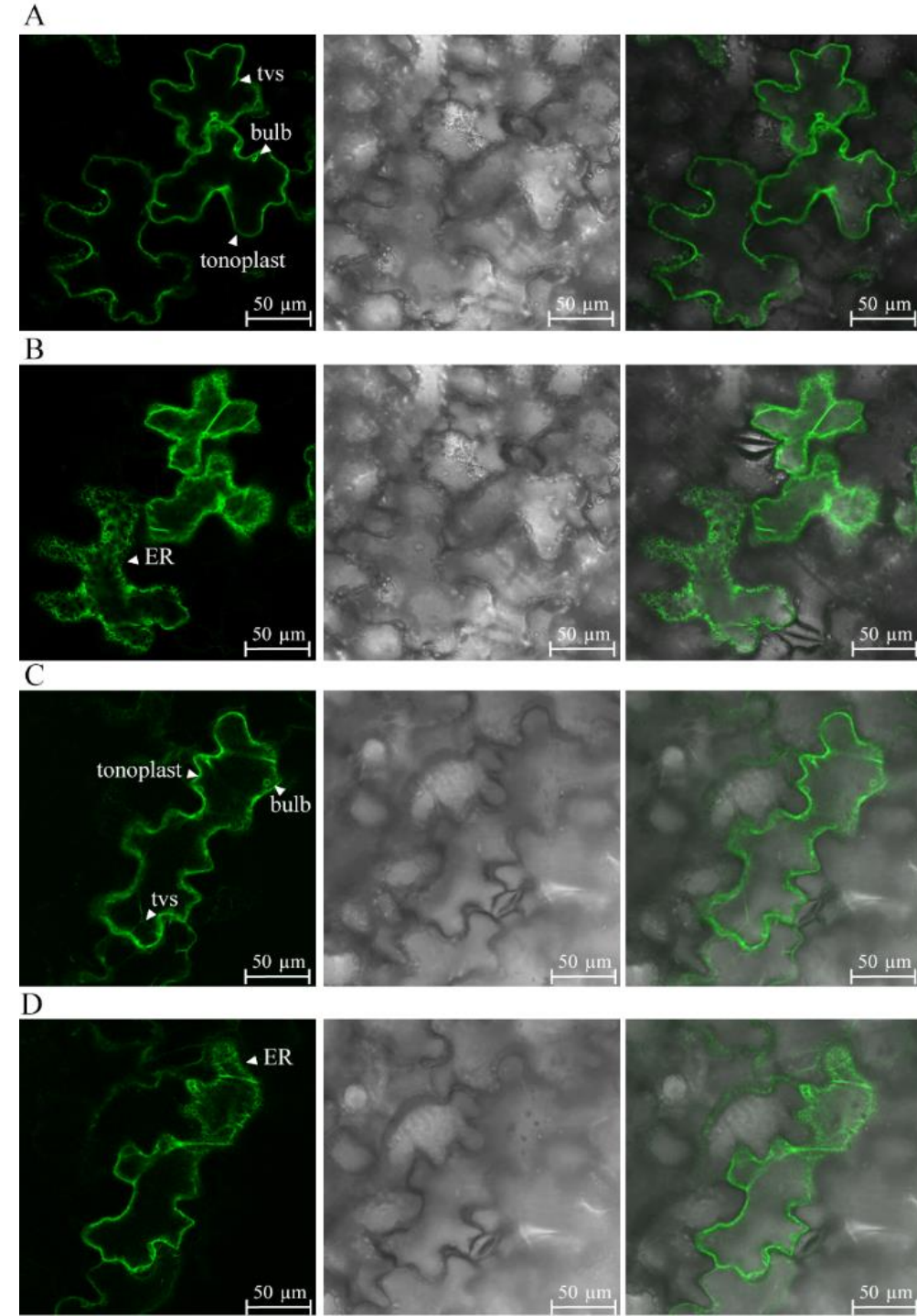


Figure S6. Sub-cellular localization of AtPDI-11 or PtPDI in *N. benthamiana* epidermal cells. Laser-scanning confocal microscopy shows that AtPDI-11-eGFP (A-B) and PtPDI-eGFP (C-D) accumulates in both in the tonoplast and endoplasmic reticulum (ER).

Figure S7.

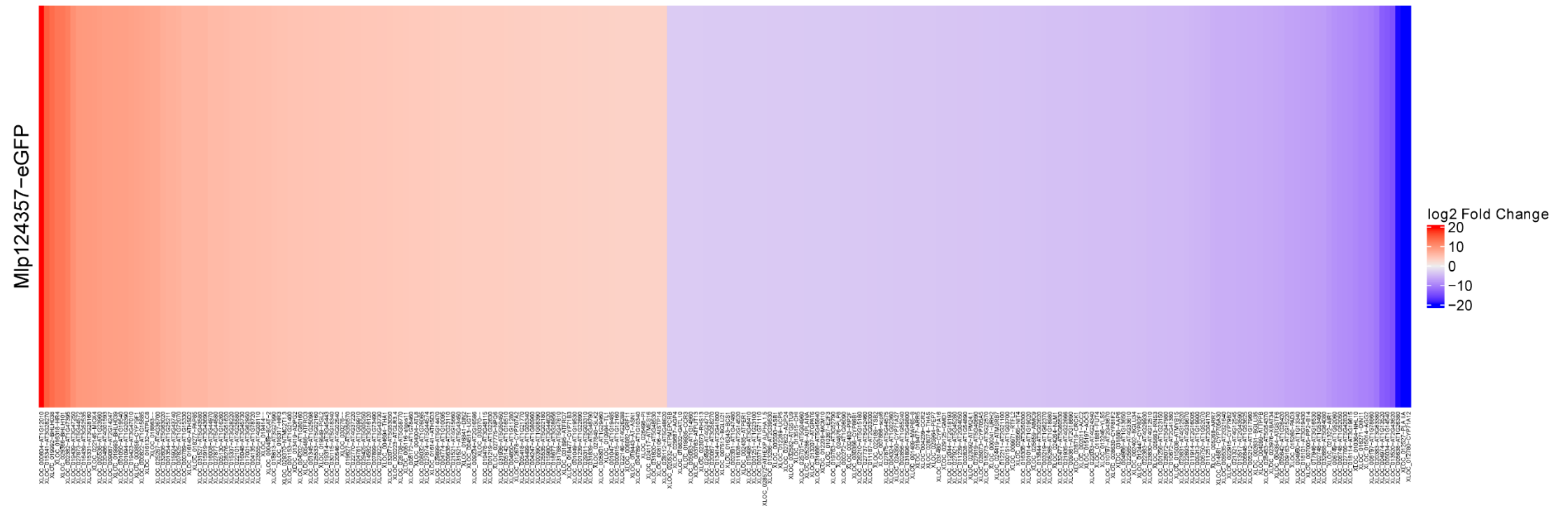


Figure S7. Heatmap of differentially expressed genes in Col-0-GFP and Mlp124357-eGFP based on transcriptome analysis.