

Figure S1. Fluorescence microscopy analysis of the epidermis of fully expanded leaves of wild type and mutant plants. (A,B) Differential interference contrast (DIC) and chlorophyll autofluorescence (Chl) images of guard cells (A) and pavement cells (B) in gray scale. Chl images were taken at the normal settings (camera gain: 50; exposure time: 1.0 s; excitation strength: 12%) and maximal settings (camera gain: 250; exposure time: 2.0 s; excitation strength: 100%). Double arrowheads indicate chloroplasts. Scale bar = 10 μ m (A,B). This figure is supplemental to Figure 1.

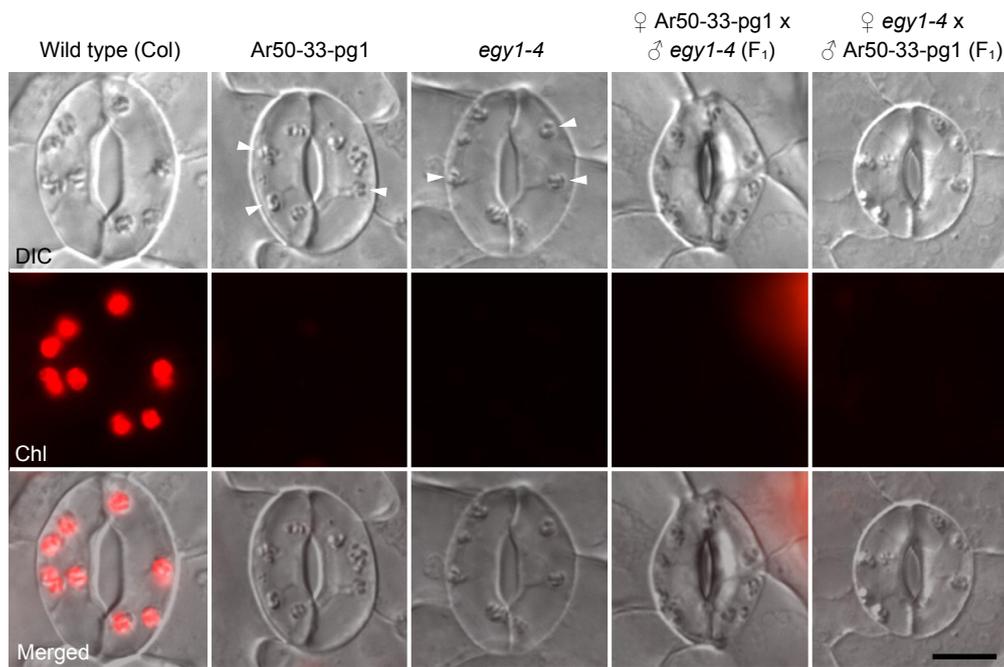


Figure S2. Phenotypic characterization of the F₁ progeny of Ar50-33-pg1 and *egy1-4* by fluorescence microscopy. DIC, chlorophyll autofluorescence (Chl), and merged images of the abaxial leaf epidermal peels obtained from the third and fourth expanding leaves of 2-week-old seedlings. Arrowheads indicate putative chloroplasts or plastids. Scale bar = 10 μ m.

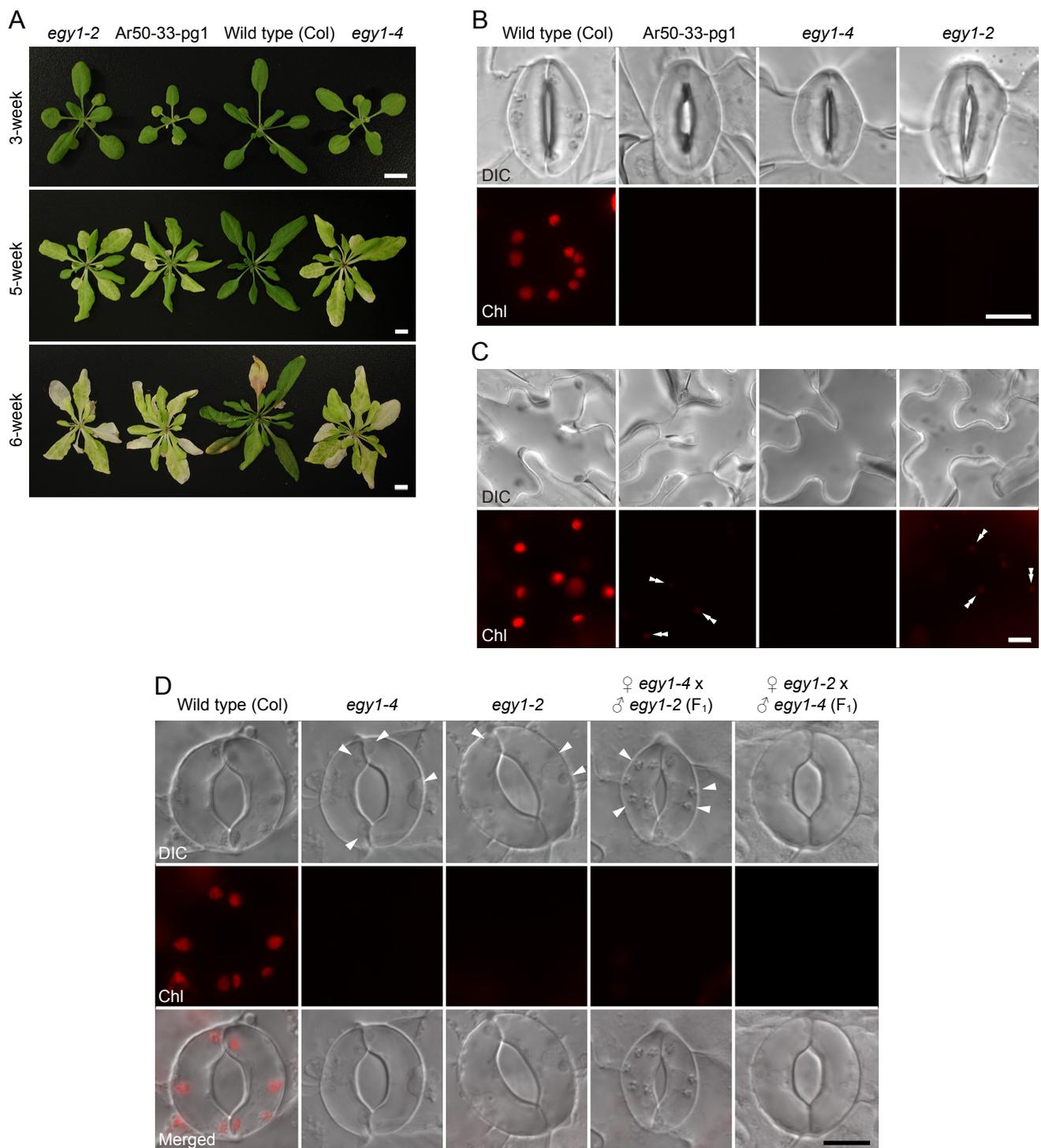


Figure S3. Phenotypic characterization of the T-DNA insertion mutant *egy1-2* and the F₁ progeny of *egy1-2* and *egy1-4*. (A) Rosette morphology of 3-week-, 5-week-, and 6-week-old wild type and mutant plants. Stems were removed just prior to image capture. The image of 6-week-old plants was originally published by Sanjaya et al. (2021) and reproduced. (B–D) Fluorescence microscopy of leaf epidermis of the wild type and mutant leaves. DIC, chlorophyll autofluorescence (Chl), and merged images of guard cells (B,D) and pavement cells (C) of the abaxial leaf epidermal peels obtained from the primary leaves of 3-week- (B,C) and 2-week-old (D) seedlings. Arrowheads indicate putative chloroplasts or plastids. Double arrowheads indicate chloroplasts. Scale bars = 1 cm (A) and 10 μm (B–D).

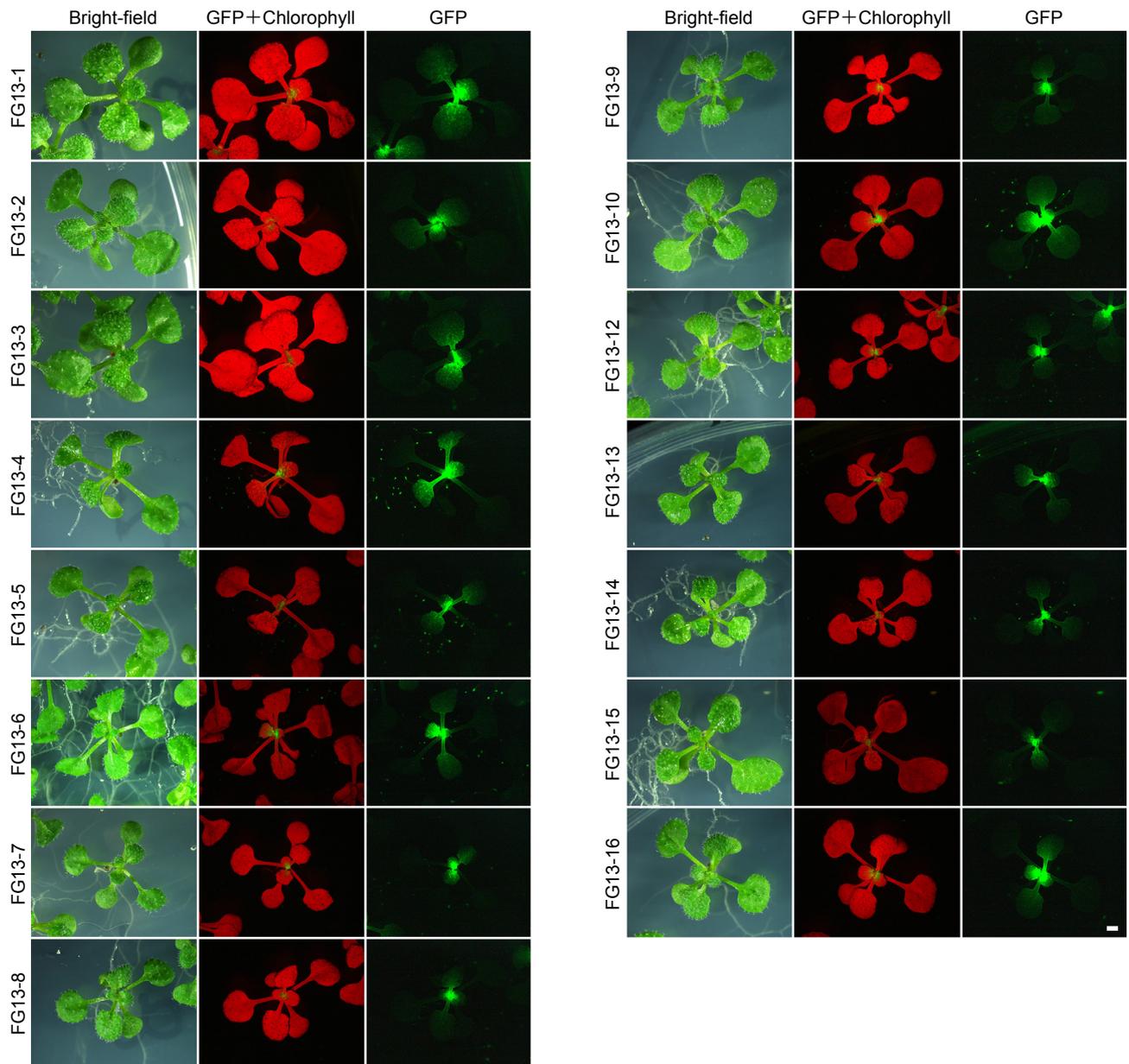


Figure S4. Generation of transgenic *Arabidopsis* lines expressing *PDF1p::TP_{SIG6}-GFP*. Images showing the bright-field view and GFP signal, which was detected using a long-path filter (GFP+Chl) or a band-path filter, in 2-week-old transgenic seedlings in the T₂ generation are shown. Scale bar = 1 mm. This figure is supplemental to Figure 3.

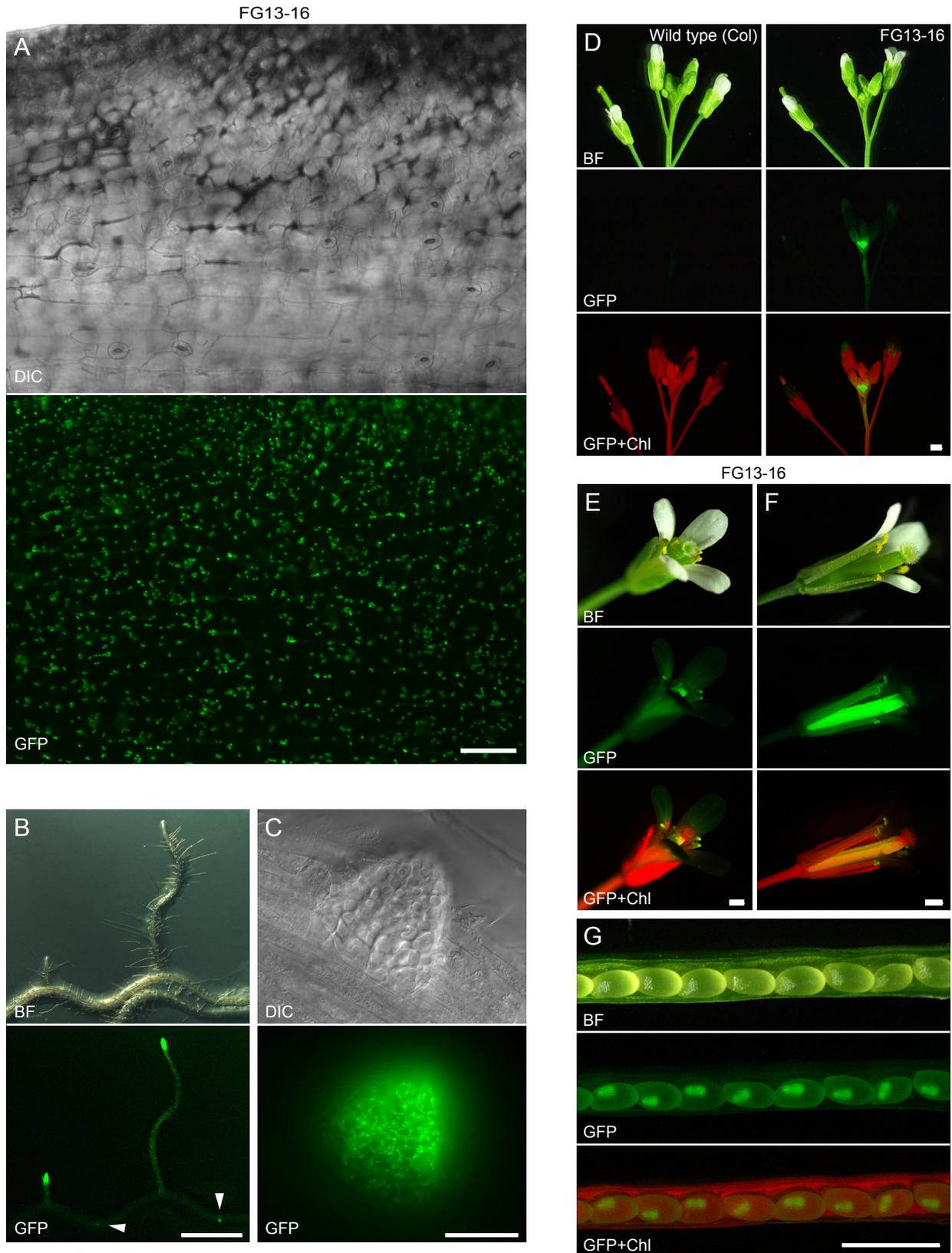


Figure S5. Characterization of the *PDF1p::TPSIG6-GFP* transgenic line FG13-16. (A–G) Bright-field (BF), DIC, and GFP images of intact developing leaf (A), lateral root (B), lateral root primordium (C), inflorescence (D), intact flower (E), dissected flower (F), and silique and ovules (G). Arrowheads in (B) indicate primordia emerging from the main root. GFP images were captured using a band-path filter (GFP) or a long-path filter (GFP+Chl). Scale bars = 50 μ m (A), 0.5 mm (B, E–G), 20 μ m (C), and 1 mm (D). This figure is supplemental to Figure 3.

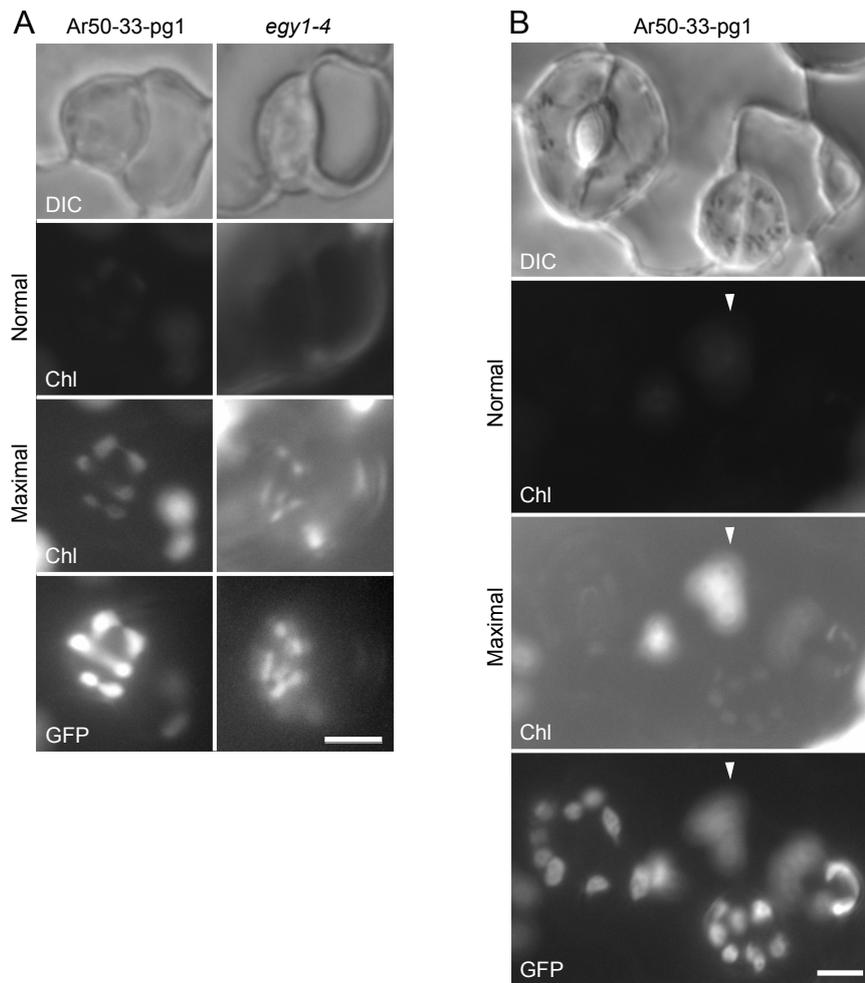


Figure S6. Fluorescence microscopy of leaf guard mother cells in mutant plants expressing *PDF1p::TP_{SIG6}-GFP*. DIC, chlorophyll autofluorescence (Chl), and GFP images are shown in gray scale. Chl images were taken at the normal settings (camera gain: 50; exposure time: 1.0 s; excitation strength: 12%) and maximal settings (camera gain: 250; exposure time: 2.0 s; excitation strength: 100%). Arrowheads in **(B)** correspond to those in Figures 4 and 6, and indicate pavement chloroplasts. Scale bar = 0.5 μ m (**A**) and 5 μ m (**B**). This figure is supplemental to Figure 6.

Ar50-33-pg1



Figure S7. TEM analysis of mesophyll and pavement cells in an expanding leaf of Ar50-33-pg1 mutant plants. Abbreviations: cp, mesophyll cell chloroplast; m, mitochondrion; n, pavement cell nucleus; v, vacuole. Scale bar = 1 μ m. This figure is supplemental to Figure 8.

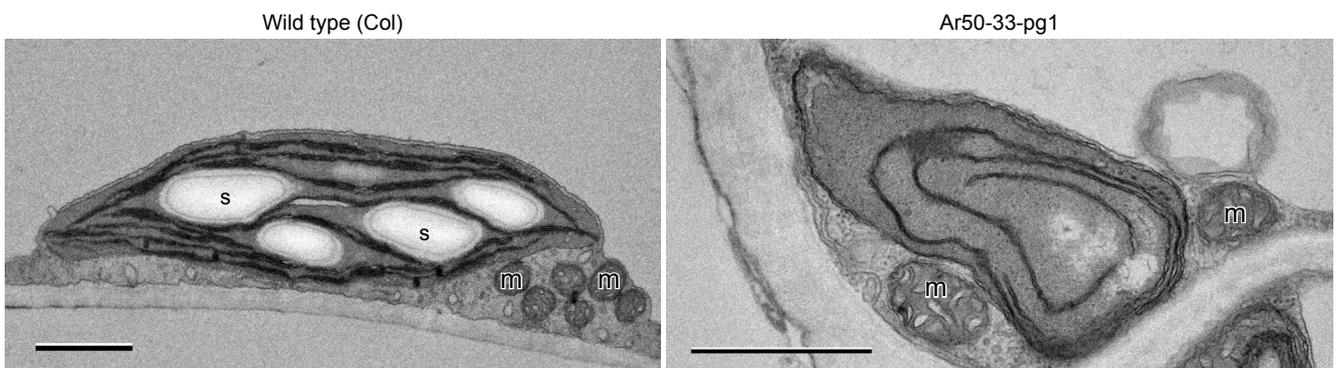


Figure S8. TEM analysis of guard cells in fully expanded leaves of wild-type (Col) and Ar50-33-pg1 mutant plants. Abbreviations: m, mitochondrion; s, starch grain. Scale bar = 1 μ m. This figure is supplemental to Figure 9.

Table S1. Segregation analysis and allelism test of *egy1-4*. Phenotypes of F₁ and F₂ seedlings after growth on MS media for 14 days.

Cross	Generation	Number of Plants			Expected ratio (Normal : Pale green)	χ^2 value
		Total	Normal	Pale green		
♂ <i>egy1-4</i> * × ♀Col	F ₁	15	15	0	1 : 0	0.00
♂ <i>egy1-4</i> * × ♀Col	F ₂	390	294	96	3 : 1	0.03
♂ <i>egy1-4</i> * × ♀ <i>egy1-2</i> *	F ₁	>20	0	>20	0 : 1	0.00
♂ <i>egy1-2</i> * × ♀ <i>egy1-4</i> *	F ₁	>20	0	>20	0 : 1	0.00
♂FG13-16 × ♀ <i>egy1-4</i> *	F ₁	50	50	0	1 : 0	0.00

*Plants with homozygous *egy1* mutations were used for crossing.