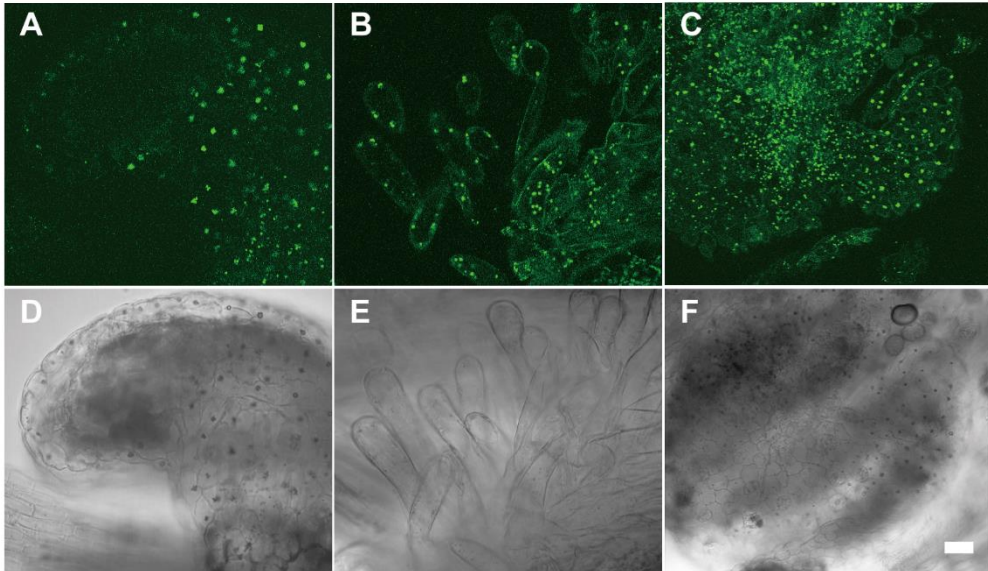
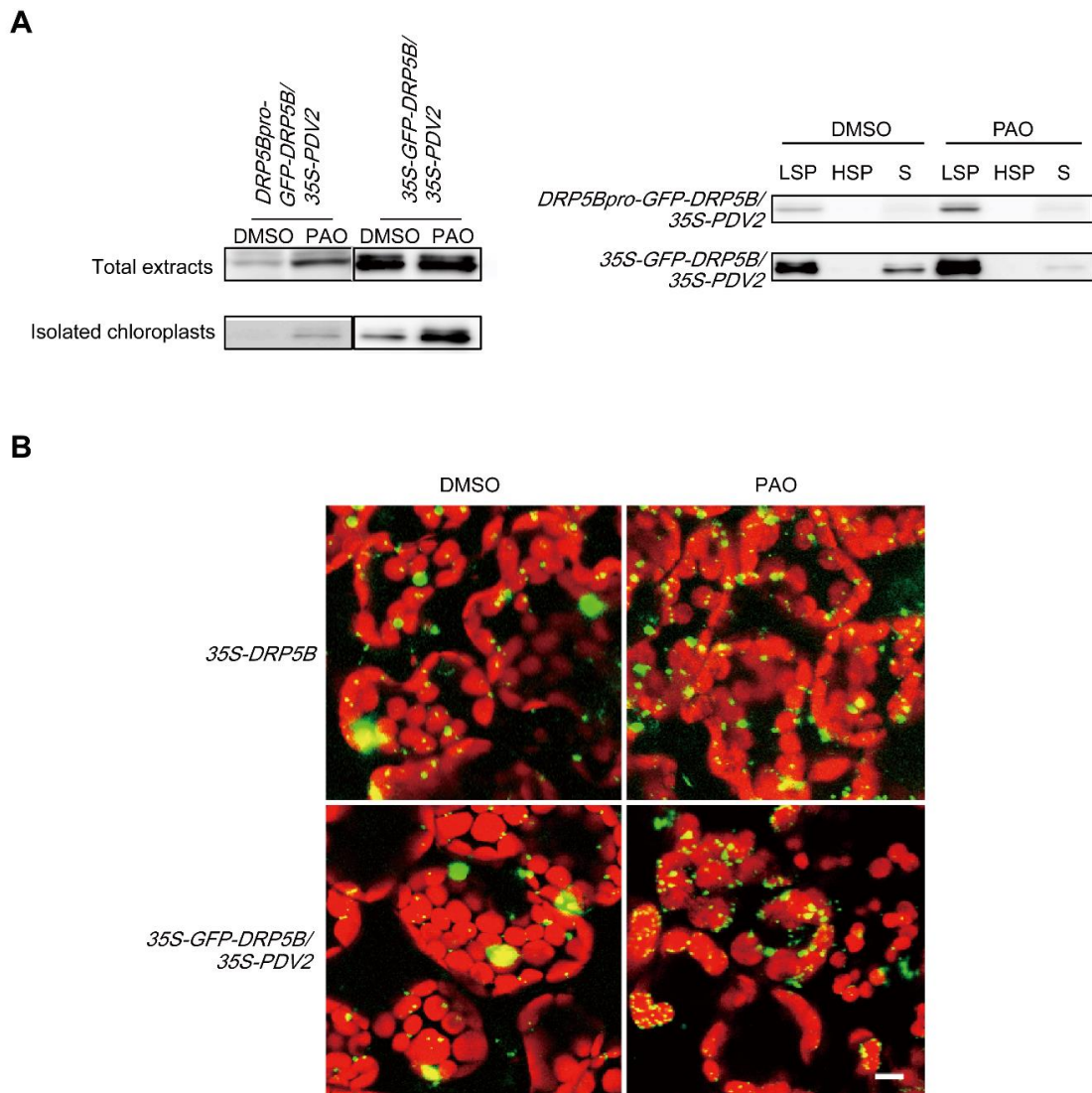


**Supplemental Figure 1.** WM treatment increases chloroplast number. Statistical comparison of the number of chloroplasts per mesophyll cell in plants treated with 50, 100, and 200 μM WM and in untreated plants. Error bars represent SE ( $n = 50$  cells).



**Supplemental Figure 2.** Intracellular localization of GFP-PI4K $\alpha$ 1 and GFP-PI4K $\beta$ 2 in *A. thaliana*.

*GFP-PI4K $\alpha$ 1* and *GFP-PI4K $\beta$ 2* were expressed under their respective promoters in *A. thaliana*. (A, D) Anther expressing *GFP-PI4K $\alpha$ 1*; (B, E) stigma expressing *GFP-PI4K $\alpha$ 1*; (C, F) anther expressing *GFP-PI4K $\beta$ 2*. (A-C) GFP fluorescence; (D-F) DIC image. GFP fluorescence images were taken using a confocal laser-scanning microscope. Bar = 20  $\mu$ m.



**Supplemental Figure 3.** Phenylarsine oxide (PAO) treatment increases DRP5B expression and enhances DRP5B recruitment to chloroplasts.

**(A)** Expression and rough fractionation of GFP-DRP5B in *drp5b* plants after 3 days with or without 25  $\mu$ M PAO treatment. Total extract samples containing 50  $\mu$ g of total proteins extracted from whole *drp5b* plants expressing *GFP-DRP5B* under the *DRP5B* promoter and overexpressing *PDV2* under the 35S promoter (*DRP5B*<sub>pro</sub>-*GFP-DRP5B*/*35S-PDV2*) and samples containing 2.5  $\mu$ g of total proteins extracted from *drp5b* plants overexpressing both *DRP5B* and *PDV2* (*35S-GFP-DRP5B*/*35S-PDV2*) were loaded. In isolated intact chloroplasts, 2  $\mu$ g of protein was loaded for analysis of *DRP5B*<sub>pro</sub>-*GFP-DRP5B*/*35S-PDV2*, and 0.2  $\mu$ g of protein was loaded for analysis of *35S-GFP-DRP5B*/*35S-PDV2*.

GFP-DRP5B was detected with anti-GFP. For fractionation, homogenates were centrifuged at  $20,000 \times g$  to sediment low-speed pellet (LSP) fractions. The supernatants were further fractionated by centrifugation at  $100,000 \times g$  into high-speed pellet (HSP) and supernatant (S) fractions.

**(B)** *35S-GFP-DRP5B* and *35S-GFP-DRP5B/35S-PDV2* plants were treated with  $25 \mu\text{M}$  PAO (right panels) or with DMSO (left panels) for 3 days. Images of GFP and chlorophyll fluorescence were taken using a confocal laser-scanning microscope. Bar =  $10 \mu\text{m}$ .