

Supplemental Table 1. Photochemical properties of the purified phyA proteins.

	PCB-phy		PΦB-phy		PEB-phy	SAR	$\lambda_{\text{min}}/\lambda_{\text{max}}^{\text{a}}$
	λ_{Pr}	λ_{Pfr}	λ_{Pr}	λ_{Pfr}	λ_{Pr}		
Native oat phyA	-	-	666±2	730±2	-	1.02±0.05	1.000
Wild-type phyA	654±2	720±2	660±2	730±2	576±2	0.69±0.05	0.995
S598A phyA	654±2	720±2	658±2	728±2	576±2	0.70±0.05	0.998
Δ65 phyA	652±2	714±2	658±2	726±2	574±2	0.72±0.05	0.770
Δ65/S598A phyA	650±2	714±2	656±2	726±2	572±2	0.73±0.05	0.780

^a The SAR value is the ratio of the Pr absorbance maxima to the 280nm absorbance peak. The elution fractions from streptavidin affinity chromatography were used for this.

^b The ratio of the heights of Pfr (λ_{max}) and Pr (λ_{min}) peaks in difference spectra to represent the perfection of photoconversion.