Supplementary Material

Table S1. T_{50} for leaves (h) and PSII-enriched membranes (min) for loss of functional PSII and for K-step formation.

	Leaves		PSII-enriched membranes	
	460	660	460	660
Loss of functional PSII *	3.4 ± 0.3	5.5 ± 0.6	20.4 ± 4.8	21.7 ± 4.8
K-step formation **	1.3 ± 0.1	2.9 ± 0.1	16.12 ± 1.1	57.8 ± 19.2

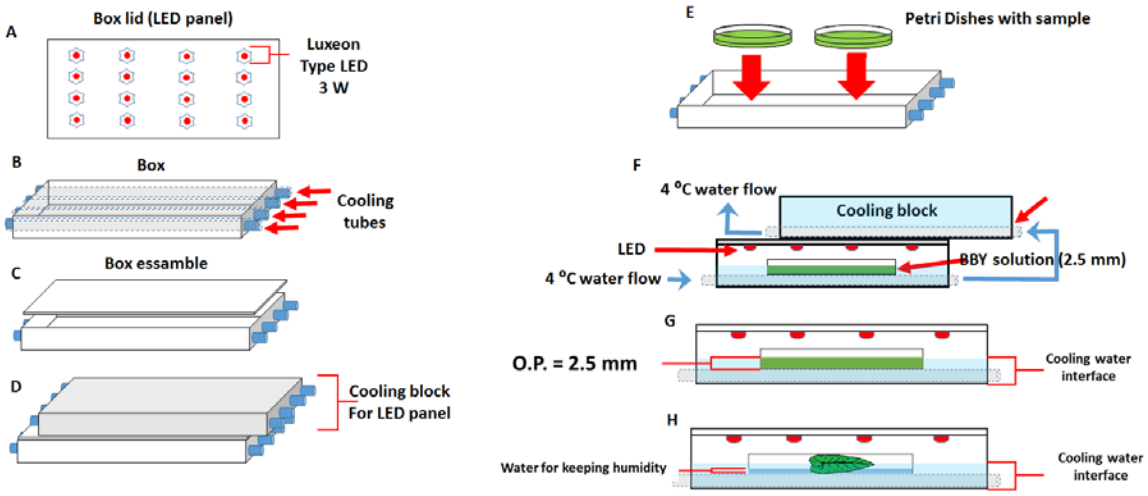

Figure S1. Experimental setup used for photodamage experiments *in vivo* and *in vitro*.

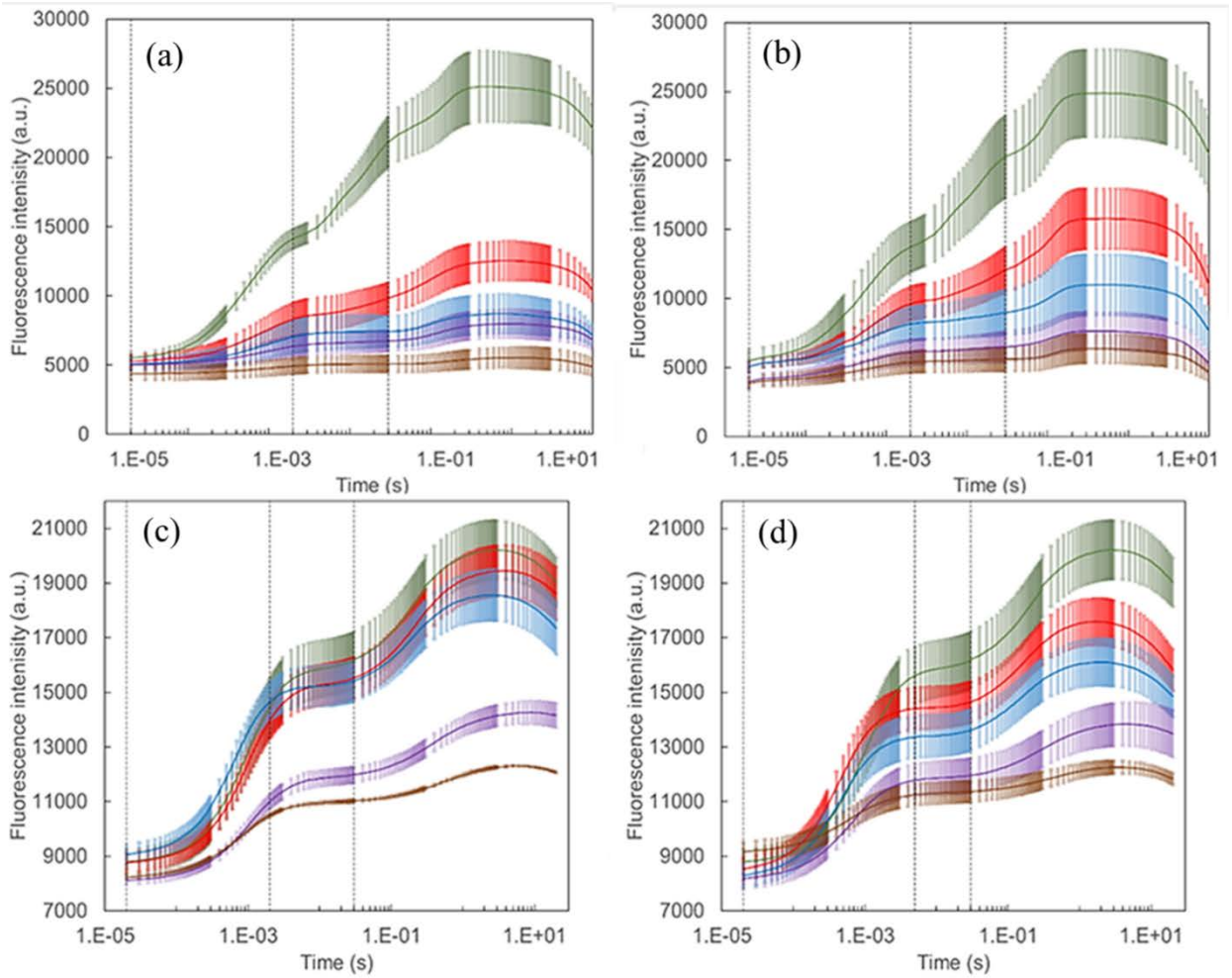

Figure S2. Changes in the OJIP transient induced by PSII photodamage. Samples were illuminated with light of wavelength 460 or 660 nm at 1300 µmol photons m^{-2} s^{-1}. (a) Spinach leaves exposed to 460 nm light; (b) spinach leaves exposed to 660 nm light; (c) PSII enriched membranes exposed to 460 nm; (d) PSII enriched membranes exposed to 660 nm light. For panels a and b, the dotted lines separate the O, J and I and P steps, the colour code is green 0 h, red 1 h, blue 2 h, purple 3 h and brown 6 h for 460 nm (a) or 5 h for 660 nm (b). For panels c and d, the dotted lines represent the O, J_2 (note that JI phase is almost absent with the inflection occurring at 5 ms) and I steps; the colour code is green 0 min, red 2.5 min, blue 5 min, purple 20 min and brown 60 min. Leaves and PSII enriched membranes were exposed to light at 4^0C. Each curve represents the average ± standard deviation of each time point.

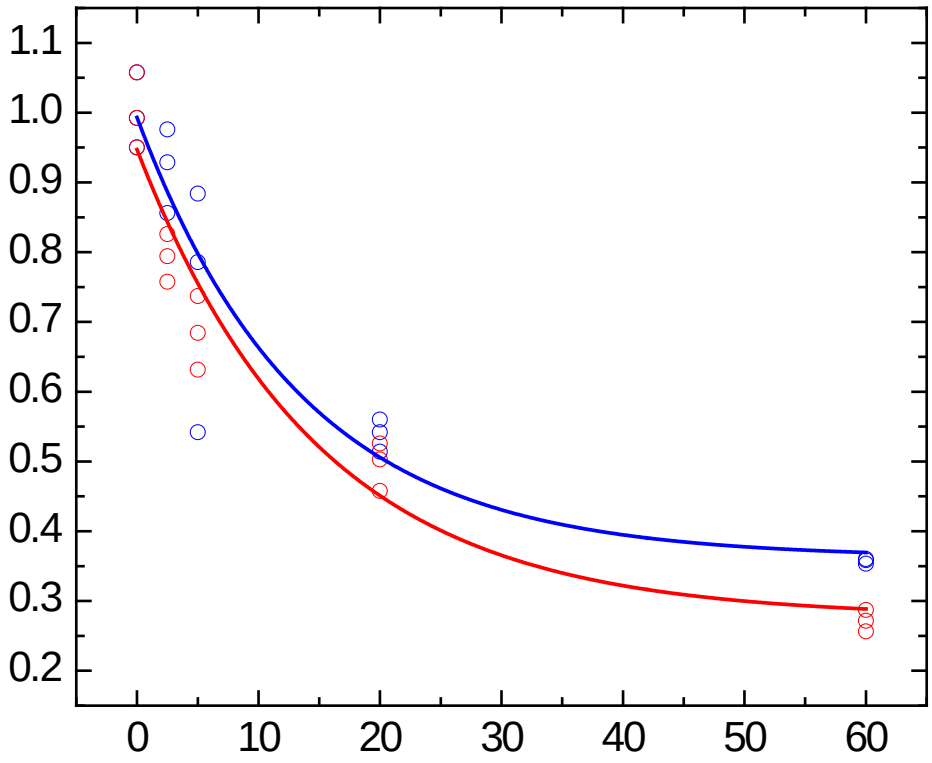

Figure S3. Effect of photodamage on F_V as the time course of photodamage advanced in PSII enriched membranes. F_V values were normalized to the respective values at 0 h, the colour code was 460 nm (blue) and 660 nm (red).