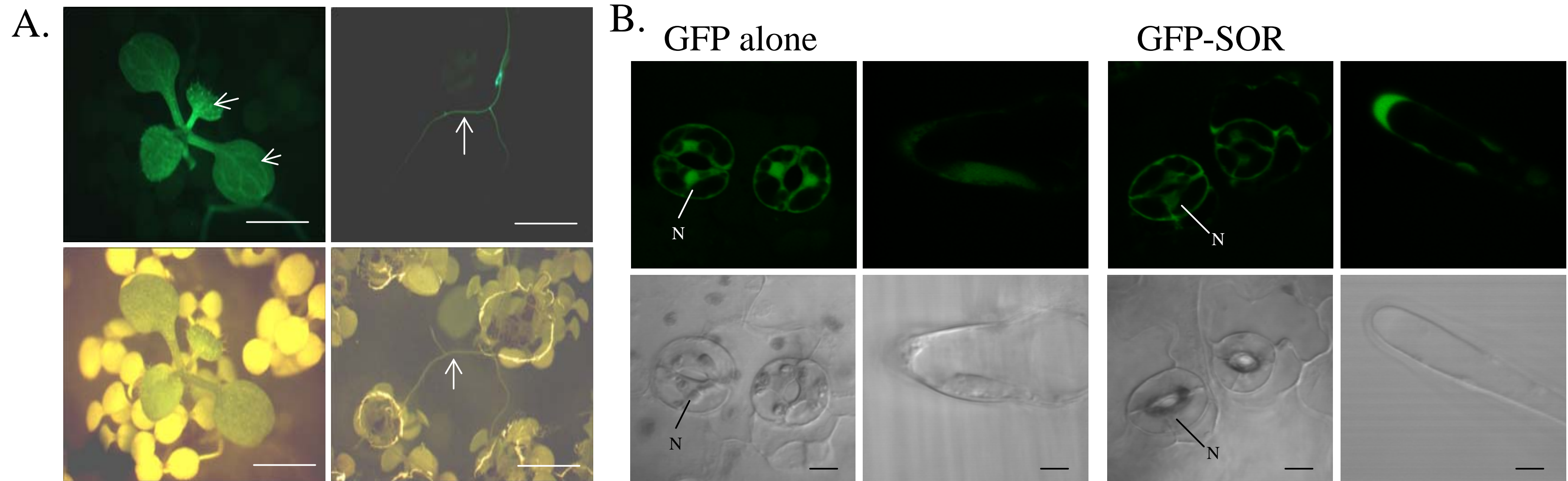
Supplemental figure 1.



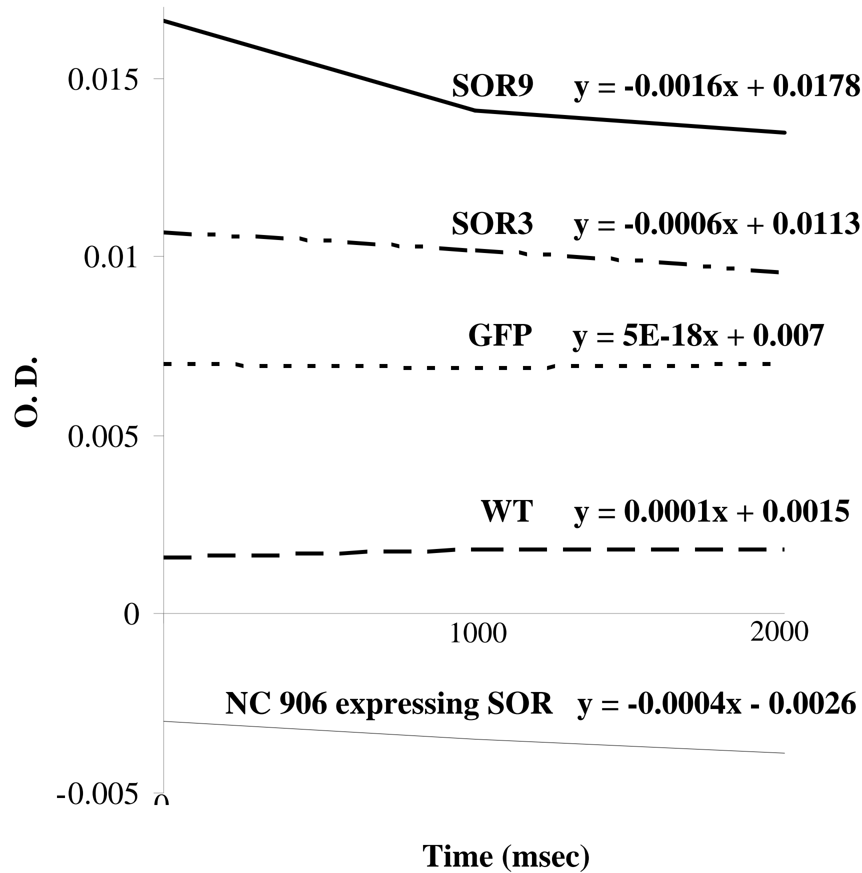
Supplemental figure 1. *P. furiosus* GFP-SOR is a soluble protein when expressed in Arabidopsis. **A**. Fluorescence image of T1 generation GFP-SOR seedlings on kanamycin selection medium. The GFP-SOR fluorescence is in the cytosol of both shoots and roots (upper panel arrows) and bright field image of the same seedlings (lower panel). Note transformed seedlings have fluorescence but non-transformed did not survive on kanamycin medium. (scale bar = 1 cm) **B**. Fluorescence image of the guard cells and root hairs of GFP expressing plants and T5 generation GFP-SOR plants (upper panel) and bright field image of the same guard cells and root hairs (lower panel). Note, GFP-SOR fluorescence is predominantly cytosolic in contrast to GFP fluorescence which is distributed in the nucleus (N) and cytosol (scale bar = 10 μm).

Supplemental figure 2.

Wild Type SOR3

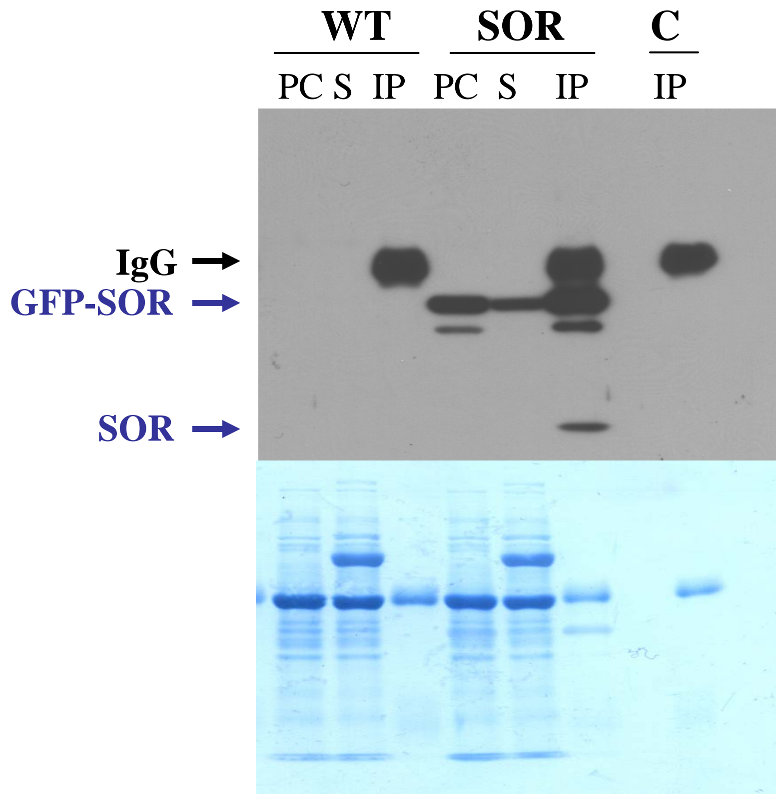
Supplemental figure 2. Delayed flowering in SOR plants is more pronounced when plants are grown under continuous light. The photograph was taken of 56-d-old, short- d-grown plants exposed to continuous light for 4 d.

Supplemental figure 3.



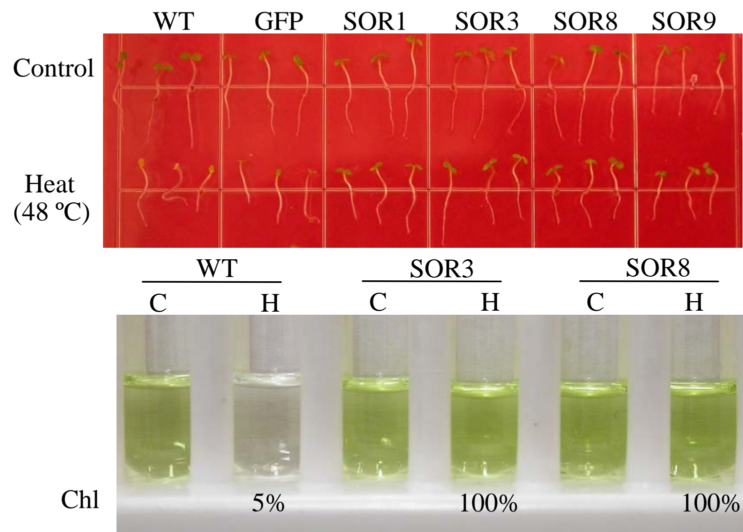
Supplemental figure 3. SOR activity is measured by showing the reoxidation of ferrocytochrome c. Cytochrome c (10 µM) absorbance at 550 nm was measured over time. Soluble proteins from each plant was added at time 0 (~ 820 µg of wild type, GFP, and SOR3, ~920 µg of SOR9). For comparison, the reduction by extracts of *E. coli* NC906 expressing SOR (~10 mg) is shown. Plant extracts were prepared from 56-d-old plants. Note, over 100 fold more protein was used in the *E. coli* extracts assays.

Supplemental figure 4.



Supplemental figure 4. Recombinant SOR was immunoprecipitated from extracts of transgenic Arabidopsis leaves using antibodies raised against *P. fuirosus* SOR. The precipitate was separated by SDS-PAGE and the proteins visualized with SOR antibodies. Leaf extracts from WT plants were used as a control. IgG, GFP-SOR and SOR) are indicated (Upper panel). The blot was stained with immidoblack to visualize the proteins (Lower panel). Lanes are: PC - after preclearing the total protein w/ protein A Sepharose beads (2.5% of total); S - supernatant after immunoprecipitation w/ SOR antibody (2.5% of total); IP - Immunoprecipitation w/ SOR antibody (10% of total); C - control of protein sepharose beads (10% of total).

Supplemental figure 5.



Supplemental figure 5. Etiolated SOR seedlings accumulate more chlorophyll after heat-treatment. Etiolated seedlings were grown for 2.5 d in the dark at 22°C; exposed to 48°C for 30 min in the dark, and transferred to continuous light for 24 hrs. Upper panel shows control and heat-treated seedlings after 24 hrs of light. Lower panel shows extracted chlorophyll from 3 of the lines.

Supplemental figure 6.

Supplemental figure 6. In-gel assay showing APX activity.
APX activity from 10-d-old seedlings was detected on native PAGE (12% w/v) in the presence of of 2 mM ascorbate and 10% (w/v) glycerol as described by Panchuk et al., (2002). The gel was stained in a solution of 50 mM sodium phosphate buffer (pH 7.8) containing 28 mM TEMED and 2.45 mM NBT for 10–20 min with gentle agitation in the presence of light and imaged with a UV-gel scanner.

Supplemental Table 1. SOR/SOD activity in 14-d-old SOR and GFP transgenic Arabidopsis seedlings

Sample	Specific Activity (U/mg)[a]
GFP	20.6
SOR-8	20.3
SOR-9	21.8
GFP control (HT)	10.5
SOR-8 (HT)	37.8
SOR-9 (HT)	36.8

[a] Heat-treated (HT) samples were treated at 85˚C for 15 min and centrifuged at 21,000g for another 15 min as described in Methods.