**Supplemental Figure Legends**

**Supplemental Figure 1.** Nuclear co-localization of Prx1 and phosphorylated TOPK. RPMI7951 cells were treated with UVB (4 kJ/$m^2$) and cultured at 37$^o$C for 30 min and then incubated with primary antibodies against Prx1 or phosphorylated TOPK (Thr9) and secondary antibodies conjugated with Cy2 or Cy3, respectively. Co-localization of Prx1 and TOPK (Thr9) was visualized by confocal microscopy (NIKON C1$^{si}$ Confocal Spectral Imaging System). Images of untreated control (*left*) and UVB-treated (*right*) cells represent the same region for each allowing the bottom images to show the merged staining result. Magnification (40x); scale bar = 50 μm.

**Supplemental Figure 2**. TOPK and Prx1 abundance in cancer tissues. A, protein levels of TOPK (*left*) are higher in malignant melanoma human skin tissue compared with matched normal skin tissue (*, $p = 0.0009$); and protein levels of Prx1 (*right*) are higher in malignant melanoma human skin tissue compared with matched squamous or basal cell carcinoma (*, $p = 0.0069$). Data are expressed as means ± S.D. of 2 independent experiments.

**Supplemental Figure 3.** FPLC gel filtration purification of fusion proteins. A, His-Prx1 (Wt), mutant His-Prx1-S32A (S32A) or mutant His-Prx1-S126A (S126A) fusion proteins were purified from BL21 bacteria using Ni-NTA agarose beads and FPLC gel filtration. Purification was confirmed by Coomassie blue R-250 staining. The numbers 1, 2, and 3 indicate the FPLC fraction number and “load” indicates the proteins before FPLC. B,

FPLC Fraction 3 (A) for Prx1-Wt (Wt) and Prx1-S32A (S32A) was further purified by FPLC and used to obtain the circular dichroism (CD) spectra.