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UV-B inhibition of hypocotyl growth in etiolated *Arabidopsis thaliana* seedlings is a consequence of cell-cycle arrest initiated by photodimer accumulation

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**Supplementary material:**

**Fig. S1.** Response of etiolated Arabidopsis seedlings to monochromatic UV-B irradiation. A-C) Hypocotyl growth inhibition in two- to three-day-old etiolated seedlings irradiated with narrow band UV-B at 290 nm. Seedlings were returned to darkness after UV-B irradiation and photographed two days later. D) Mean hypocotyl lengths (cm) of the seedlings shown for each treatment (± S.E.). Asterisks (*) denote significance (p<0.05) based on the Student’s t-test comparison between Col-0 wt and each mutant.
**Fig. S2.** UV-B fluence response of hypocotyl growth inhibition in DNA damage response mutants. Two- to three-day-old etiolated seedlings were irradiated with broad band UV-B. Seedlings were returned to darkness after UV-B irradiation and photographed two days later. Data are expressed as percent of the untreated dark control of the same genotype (± S.E.). **A)** *xpf sog1-1, xpf atm, and atm* (SALK_040423C) Arabidopsis mutants. *xpf atm* displays a *xpf*-3 hypersensitive UV-B phenotype regarding hypocotyl growth inhibition and is unlike *xpf sog1-1* and the single *atm* mutant that are similar to wt. **B)** *xpf-2 atr-5*, *xpf-3*, and *atr-2* (SALK_032841C) Arabidopsis mutants. *xpf-2 atr-5* mutant also has a *xpf*-3 hypersensitive UV-B phenotype regarding hypocotyl growth inhibition, where *atr-5* is similar to wt. Double mutants *xpf atm* and *xpf-2 atr-5* were provided courtesy of Dr. Anne Britt (UC-Davis, CA, USA).
Fig. S3. UV-B fluence response of hypocotyl growth inhibition in *hy5* and *cop1*. Two- to three-day-old etiolated seedlings were irradiated with broad band UV-B. Seedlings were returned to darkness after UV-B irradiation and photographed two days later. Data are expressed as percent of the untreated dark control of the same genotype (± S.E.). HY5 and COP1 are components in the UVR8 photoreceptor signaling pathway in response to UV-B. Mutants of *hy5* and *cop1* have similar hypocotyl growth inhibition as wt after UV-B irradiation.
Fig. S4. Effect of UV-B irradiation and hydroxyurea (HU) on hypocotyl growth and gene expression in *uvr8*-2. **A)** Hypocotyl growth inhibition in two- to three-day-old etiolated seedlings irradiated with narrow band UV-B at 290 nm and subsequently treated with 1 mM HU. Circles represent *Ler* wt and triangles represent *uvr8*-2. Filled symbols indicate response after UV-B irradiation only (-HU); open symbols indicate response after UV-B irradiation with 1 mM HU treatment (+HU). Data are expressed as percent of the untreated dark control of the same genotype (± S.E.); asterisks (*) indicate significance (p<0.05) based on the Student’s t-test between *Ler* wt and *uvr8*-2 at each fluence (in the absence of HU). **B)** UV-B-specific gene expression in two- to three-day-old etiolated seedlings irradiated with UV-B at 290 nm. Seedlings were placed back in the dark and harvested 2 h later. Expression (± SE; n= 3) was determined by quantitative real-time PCR using the Livak 2^ΔΔCT method with *ACTIN2* as the reference gene. Top panels show expression after UV-B irradiation only (-HU). Bottom panels show expression after UV-B irradiation with 1 mM HU treatment (+HU). Left panels: *CHS*; right panels: *UDPgtfp*. 