

Supplemental figure 1. Persistent phosphorylation of histone H2AX after exposure to uniform UV in XP-G cells. Normal (0.8 μm beads – red arrows) and XP-G cells (2.0 μm beads – yellow arrows) on same slide were irradiated with 10 J/m^2 UV and then cultured for 24 h before fixation. (Left image) Normal and XP-G cells were stained for γ -H2AX. XP-G cells show high levels of pan-nuclear γ -H2AX staining. Post-UV γ -H2AX was present 24 h after uniform irradiation in the XP-G cells but not in the normal cells. (Right image) Normal and XP-G cells were stained for XPC protein. All nuclei show pan-nuclear staining for XPC.

Supplemental figure 2. Localization of γ -H2AX at site of localized DNA damage. XP-B cells (XP183MA) were irradiated with 10 J/m^2 localized UV and then cultured for 3 h before fixation. XP-B cells were stained for CPD (left image) and for γ -H2AX (center image). γ -H2AX co-localized to the CPD positive region (right image).

Supplemental figure 3. Elevated p53 in XPB cells 24 h after UV. Immunofluorescent double labeling of p53 and XPB in the cells from normal (upper row) and XP-B (XP33BR) (lower row) fibroblasts 24 h after uniform exposure to 10 J/m^2 UV. (Left column) In the XP-B cells p53 showed more intense staining than the normal cells. (Right column). Staining for XPB protein was more intense in the normal cells than in the XP-B cells with mutations in the *XPB* gene.

Supplemental figure 4. γ -H2AX staining in S-phase and non-S phase cells. Normal (0.8 μm beads – red arrows) and XP-B cells (2.0 μm beads – yellow arrows) on same slide were irradiated with 10 J/m² UV and then cultured for 12 h before fixation.

Immunofluorescence double labeling with γ -H2AX (left column) and an antibody against the marker protein, NPAT (nuclear protein of ATM locus) (middle column) and merged images (right column). With NPAT staining, two spots indicate G1 phase and four spots indicate S or G2 phase. Three cells are in S or G2 phase (*) and two are stained for γ -H2AX. The other 6 cells showing γ -H2AX staining are in G1 phase.