SUPPLEMENTARY MATERIALS

MATERIALS AND METHODS

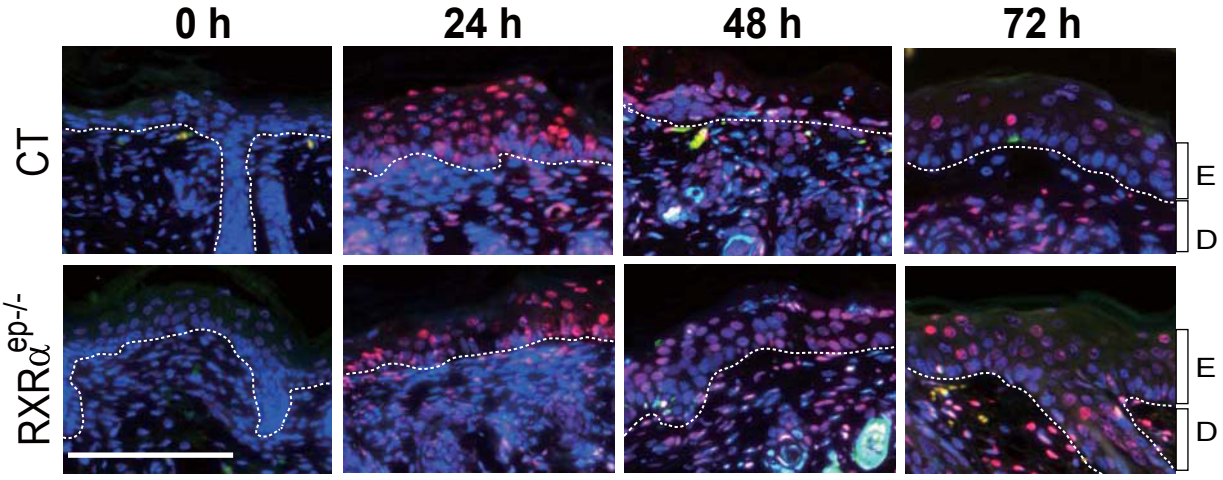
Antibodies:

The different antibodies and their dilutions used in immunohistochemistry, are : anti-Thymine Dimer (KAMIYA Biomedical, Seattle, WA, 1:200), anti-ACTIVE Caspase-3 (Promega, Madison, WI, 1:250), anti-Ki67 (Abcam, Cambridge, UK, 1:500), anti-K14 (Covance, Denver, PA, 1:1000), anti-K10 (Covance, 1:500), anti-Filaggrin (Covance, 1:1000), anti-Loricrin (Covance, 1:500), anti-8-oxo-dG (Trevigen, Gaithersburg, MD, 1:250), anti-PEP8 (1:1000), Cy2 (Jackson ImmunoResearch, West Grove, PA, 1:200), and Cy3 (Jackson, 1:250).

The antibodies used for western were mouse anti-p53 (cat. no. OP29, Calbiochem, Gibbstown, NJ), anti-p21 (cat. no. OP76, Calbiochem), anti-JNK (cat. no. sc-571, Santa Cruz Biotechnology, Santa Cruz, CA), anti p-JNK (cat. no. sc-6254, Santa Cruz Biotechnology), anti-p44/42 MAPkinase (cat. No. 4695, Cell Signaling Technology, Danvers, MA), anti-phospho p44/42 MAPkinase (cat. No. 9101, Cell Signaling Technology)**.** After incubation with the appropriate secondary antibody, signals were detected using immunochemiluminescent reagents (GE Healthcare, Piscataway, NJ). Equal protein loading in each lane was confirmed with anti-actin antibody (cat. no. A5060, Sigma-Aldrich, St. Louis, MO).

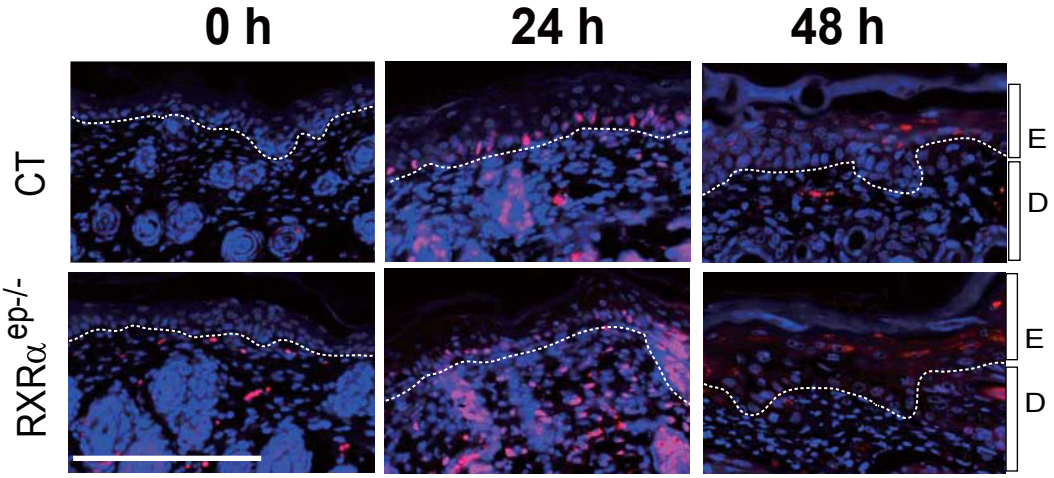
Supplementary Table 1. Primer sequences used in RT-qPCR.

gene	Sense	Antisense
HPRT	5'-TGACACTGGCAAAACAATGCA-3'	5'-GGTCCTTTTCACCAGCAAGCT-3'
hbEGF	5'-GGACAGATCTGAACCTTTTCA-3'	5'-GCAGTAGTCCTTGTATTTCCT-3'
GMCSF	5’-AATTTCACCAAACTCAAGGGC-3’	5’-GGGATATCAGTCAGAAAGGTT-3’
COX2	5’-TCAAAACCGTGGGGAATGTAT-3’	5’-AGGATGTAGTGCACTGTGTTT-3’
ET-1	5’-ACTTCTGCCACCTGGACATC-3’	5’-GTCTTTCAAGGAACGCTTGG-3’
POMC	5’-CGGTCACGGAAATACTCCAG-3’	5’-TATGGCCTTCTGTCCAGGTC-3’
SCF	5’-TCCGAAGAGGCCAGAAACTA-3	5’-TCA GATGCCACCATAAAGTCC-3’



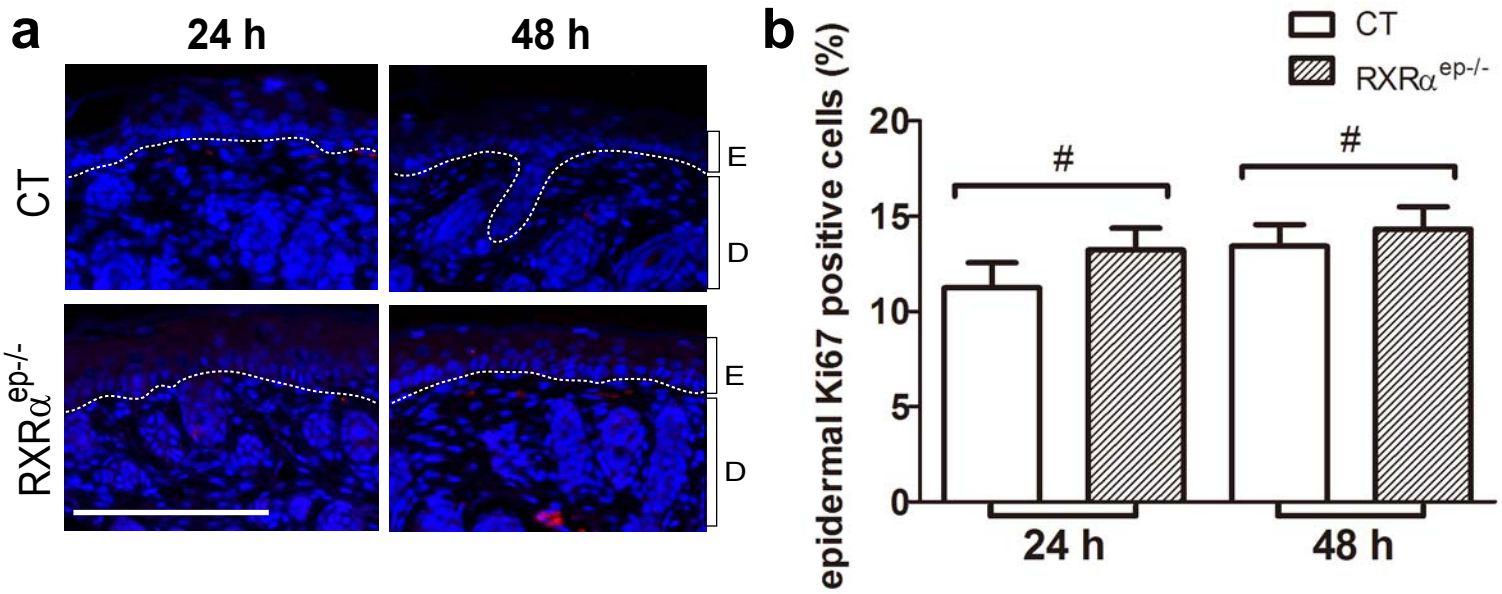
Supplementary Figure 1 (Wang et al.)

Supplementary Figure 1. UVR-induced cyclobutane pyrimidine dimers (CPD) formation in melanocytes. *Ex vivo* immunohistochemical analysis to detect the formation of DNA damage in melanocytes of control and mutant skin using antibodies against CPD (red) and Trp-1(green). Scale bar: 15.6 μm. Epidermis (E) and dermis (D) are indicated.



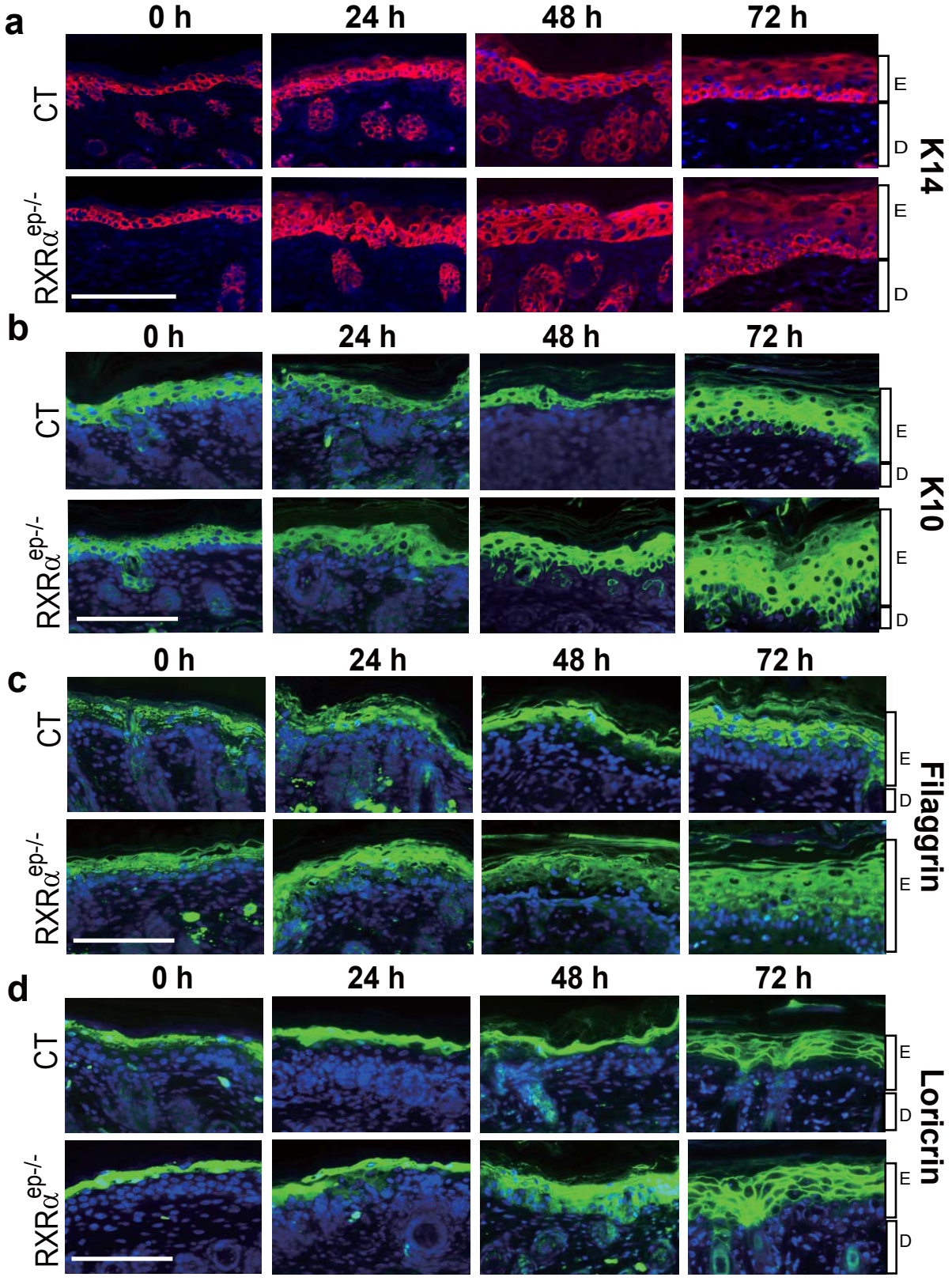
Supplementary Figure 2 (Wang et al.)

Supplementary Figure 2. p53 staining on CT and mutant mice skin before and after UV exposure. Immunohistochemical analysis to detect p53 positive cells (red) in control and mutant skin using anti-p53 antibody. All sections were counterstained with DAPI (blue). Scale bar: 15.6 μm. Epidermis (E) and dermis (D) are indicated.



Supplementary Figure 3 (Wang et al.)

Supplementary Figure 3. Epidermal apoptosis and proliferation of CT and mutant mice without UV exposure. (a) Immunohistochemical analysis to detect apoptosis at different timepoints in unirradiated control and mutant skin sections using anti-caspase3 antibody (red). Sections were counterstained with DAPI (blue). Scale bar: 15.6 μm. Epidermis (E) and dermis (D) are indicated. **(b)** Percentage of Ki67-positive cells in skin of postnatal day 2 and day 3 control and mutant mice. Measurement and cell counting were based on 10 different pictures taken from 3 CT and 3 MT mice at each timepoint. #=no statistical difference between CT and mutant mice.



Supplementary Figure 4 (Wang et al.)

Supplementary Figure 4. Altered epidermal differentiation in CT and mutant mice skin before and after UV irradiation. Immunohistochemical staining of dorsal skin biopsies from CT and mutant neonates was performed with antibodies directly against **(a)** K14, **(b)** K10, **(c)** Filaggrin and **(d)** Loricrin to identify differentiating cells in epidermis (green). All sections were counterstained with DAPI (blue). Scale bar: 15.6 μm. Epidermis (E) and dermis (D) are indicated.