

**Oxidative damage and impairment of protein quality control systems in keratinocytes exposed to a volatile organic compounds cocktail.**

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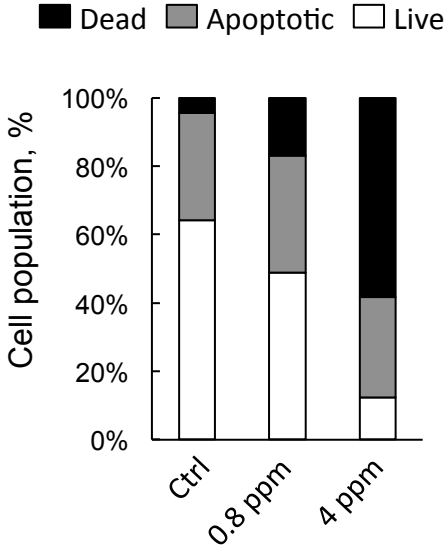
### **S.1. Effect of different doses of VOC exposure on keratinocytes viability.**

Effect of combined VOC exposure on keratinocytes viability. Primary keratinocytes prepared from plastic surgery from a 30 year old healthy female donor were exposed to VOCs (toluene, hexane, acetaldehyde, formaldehyde, acetone, at 0.8 or 4 ppmV, each) for 4 hours. Cells were stained with Annexin V-FITC and PI and analyzed by flow cytometry 24 hours after VOC exposure. Percentage of apoptotic cells (Annexin-PI positive) are shown by histogram.

### **S.2. Effect of VOC exposure on skin explant viability.**

**A.** Hematoxylin and eosin staining. NativeSkin models from a 33 year old donor female were cultured for 4 days with NativeSkin culture medium, exposed or not to VOCs (toluene, hexane, acetaldehyde, formaldehyde, acetone, 80 ppmV, each) for 4 hours every day. 24 hours after the last VOC exposure, samples were fixed in formalin and embedded in paraffin wax. 5  $\mu$ m skin cross-sections were stained with hematoxylin eosin. Scale bar is 100  $\mu$ m. **B.** Cell proliferation assessment. 5  $\mu$ m skin cross-sections were immuno-stained for Ki-67. All pictures are representative of the whole sample. Scale bar is 100  $\mu$ m. **C.** Cell viability measured with MTT. NativeSkin® models from two different donors (30, and 33 year old) females were cultured for 4 days with NativeSkin® culture medium, exposed or not to VOCs (toluene, hexane, acetaldehyde, formaldehyde, acetone, 80 ppmV, each) for 4 hours every day. 24 hours after the last VOC exposure, MTT assay was carried out. **D.** Histological scores based on the cumulative counting of the cell anomalies identified from the Hematoxylin and eosin staining (spongiosis, pyknotic nuclei, epidermal detachment). Data, mean  $\pm$  SEM from 4 skin explants from two different donors (30, and 33 year old) females were used. \*\*  $P < 0.01$ .

Supplementary Figure 1



Supplementary Figure 2

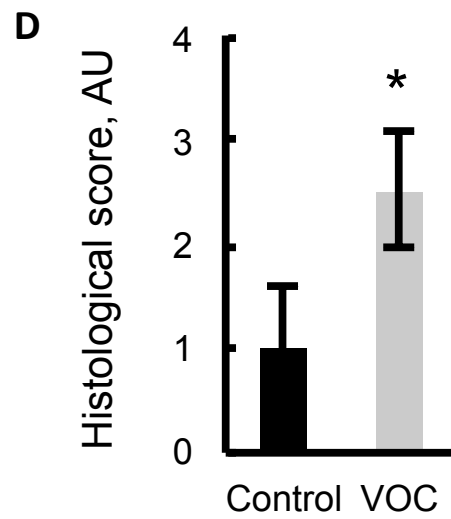
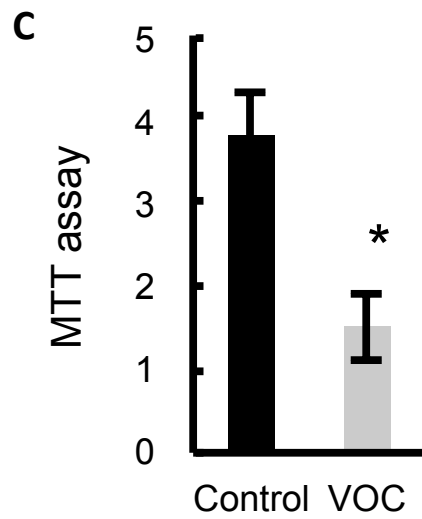
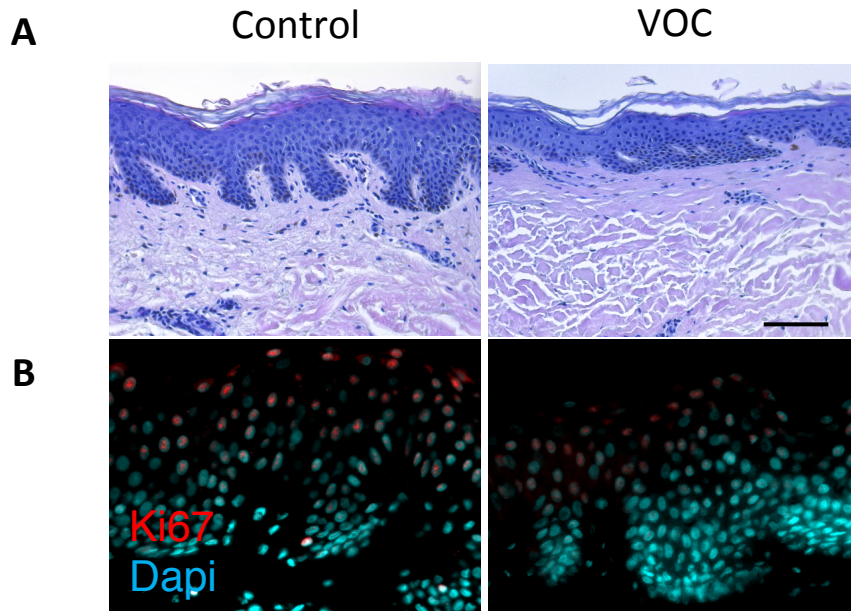
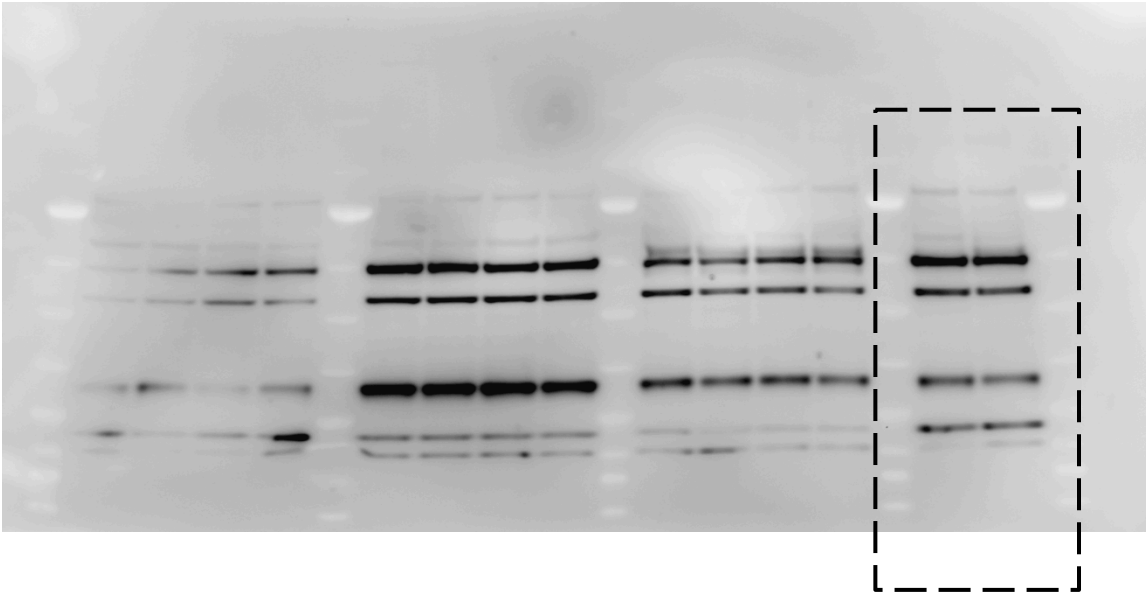


Figure 2D

Respiratory chain complex



Actin

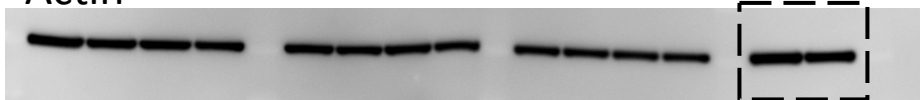
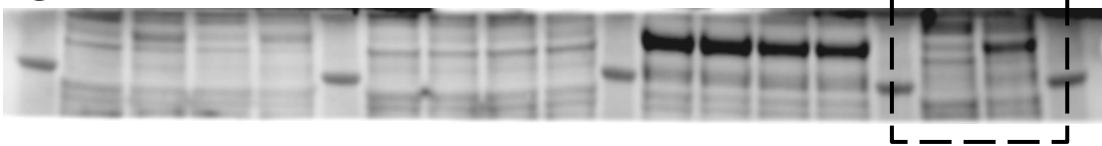
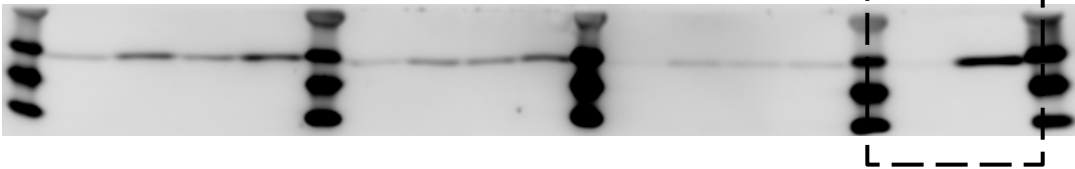


Figure 3

GPX2



H2X



Actin

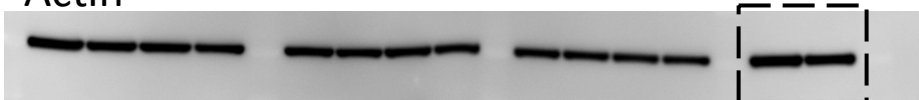
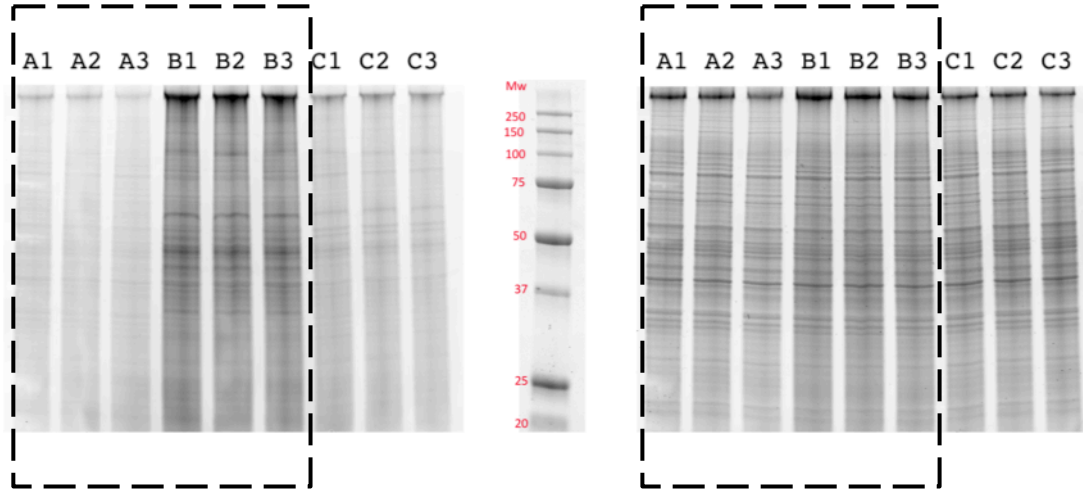
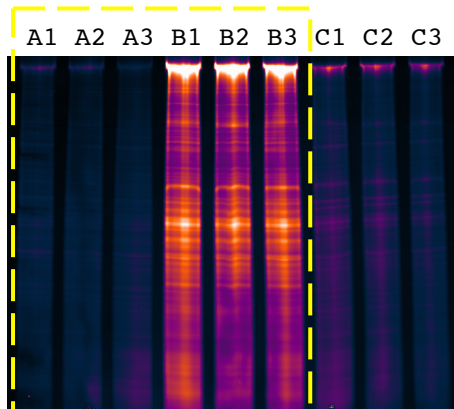


Figure 4



Oximap black and white

silver staining



Oximap in color

Figure 5B

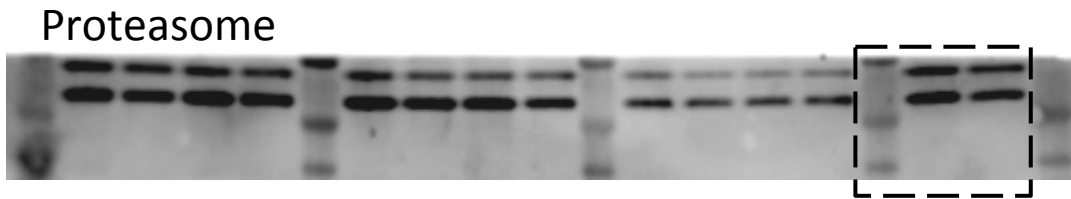


Figure 5E

