

# Analyzing the effect of a test compound on skin rejuvenation

**Question addressed:** Does compound X promote skin rejuvenation *ex vivo*?

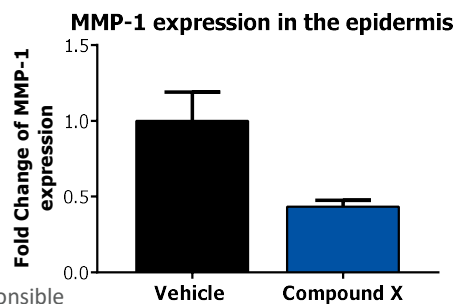
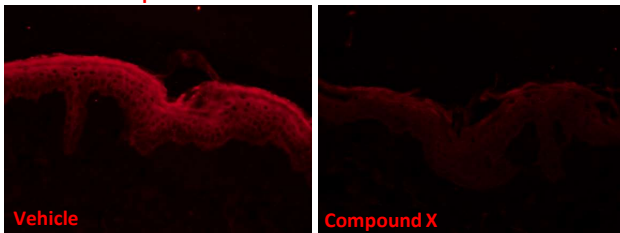
**ML approach:** Human full-thickness skin harvested from at least 2 elderly donors and treated *ex vivo* with test compounds of choice. Selected readout parameters are evaluated in the entire epidermis, dermo-epidermal junction or selected compartments (incl. using laser capture microdissection) and quantified using various techniques, e.g. analysis of the culture medium, immunohistology and quantitative (immuno-)histomorphometry, qRT-PCR, *in situ* zymography, *in situ* hybridization, and microarray.

**Possible claims:** Compound X stimulates youthful skin phenotype: youthful skin has lower MMP1, higher Sirt1, and an organized fibrillin fiber structure.

## Study example: Compound X promotes skin rejuvenation *ex vivo*

### 1. Compound X decreases matrix metalloproteinase (MMP-1) expression *ex vivo*

Matrix metalloproteinase 1=MMP-1

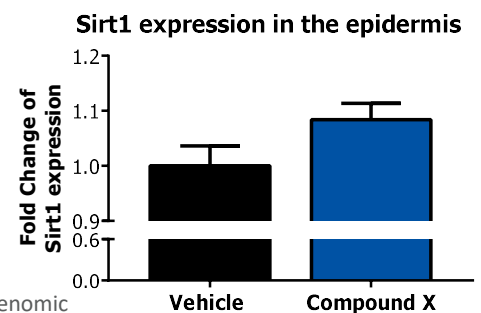
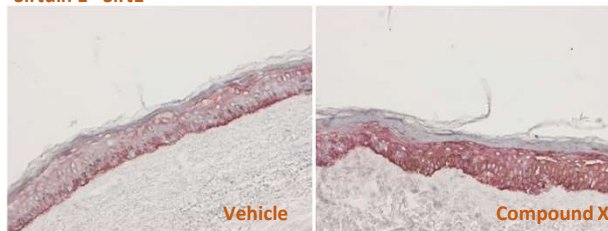


Data from one experiment. Mean±SEM n= 2 punches analysed/group from one donor.

MMP-1 immunofluorescence reveals proteinase expression, responsible for degrading collagen, elastic, and fibrillin-rich microfibers.

### 2. Compound X increases Sirt1 expression *ex vivo*

Sirtuin 1= Sirt1

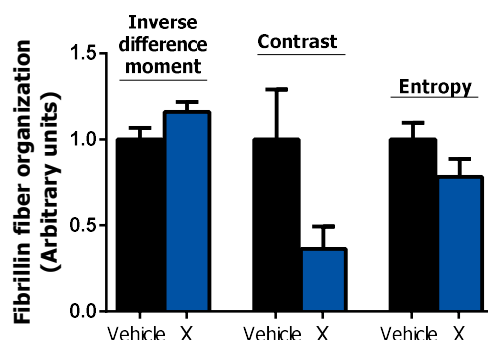


Pooled data from two independent experiments. Mean±SEM n= 2 punches analysed/group from two different donors.

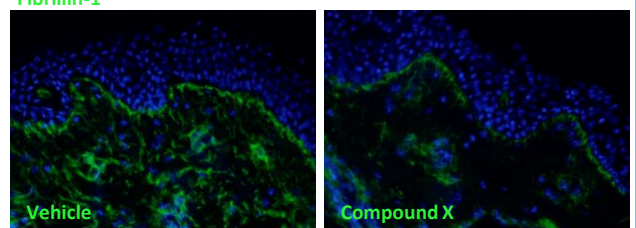
Sirt1 immunoreactivity indicates mitochondrial homeostasis, regulating senescence, aging, and genomic stability.

### 2. Compound X improves fibrillin fiber organization *ex vivo*

Pooled data from two independent experiments. Mean±SEM n= 2 punches analysed/group from two different donors.



Fibrillin-1



Fibrillin fiber organization is a marker for intrinsic and extrinsic aging.