

## Human Skin Models

Human skin models are cultured human skin cells, which serve as an alternative for animal testing and mimic the human reaction *in vitro* as closely as possible. VU medical center, department of Dermatology offers a broad range of state-of-the-art human skin models (for investigating how compounds can interfere with normal skin homeostasis and disease) and skin tissue engineering expertise. The models are a robust, safe and animal free solution to screen therapeutics or compound for effects on toxicology & irritants, wound healing parameters, immunology or other read out options.

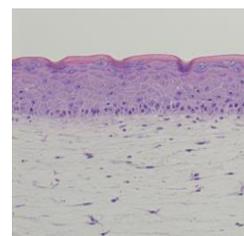
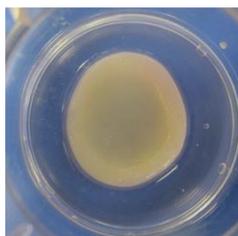
## Human Full-Thickness Skin Model

Our human full-thickness skin model consist of keratinocytes and melanocytes on a fibroblast populated dermal matrix resembling normal human skin. The model is cultured in 2-3 weeks, air-exposed. Adult, neonatal and cell line cells can be used for the construction of the full-thickness skin model. Due to the presence of melanocytes, DNA damage and UV radiation can be assessed. Depending on your compound or research questions we could adjust or modify the model or culture time. The model can f.i. be adjusted or extended with endothelial cells, Langerhans cells or MUTZ-3 derived Langerhans cells (e.g. assessment of irritants and sensitization).

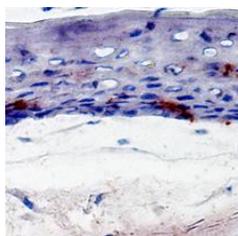
## Read-out options for Full-Thickness Skin Model are:

- Dose finding/Dose Cytotoxicity
- Tissue Histology (HE/IHC)
- Viability (MTT/Trypan blue)
- Proliferation, migration and contraction assays
- Apoptosis and Necrosis
- Distinguish sensitizers from non-sensitizers
- Irritant potency and/or dose toxicity of compounds
- Immuno-competent skin equivalent
- Sensitizer potency of compounds (barrier/penetration, activation, DC migration and maturation).
- Wound-healing model (cold or burn injury, V-wedge cut)
- Wound-healing factors secreted by skin substitutes
- Effect of compounds on cytokine, chemokine & growth factor production
- Risk assessment of chemicals
- Sprouting assay
- Anti-aging & skin hydration
- DNA damage and UV radiation assessment

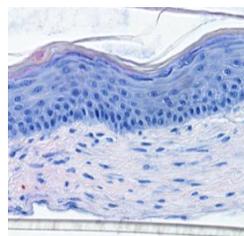
## Cultured Skin Equivalent



Skin Equivalent containing MUTZ-LC

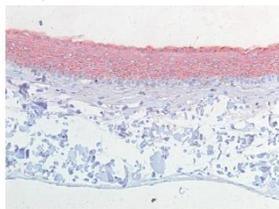


Skin Equivalent with fibroblast-derived matrix

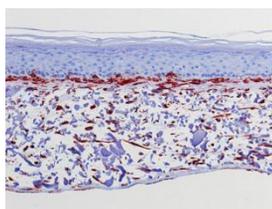


## Assays and Techniques:

- ELISA
- FACS
- Western Blotting
- qPCR
- specific kits



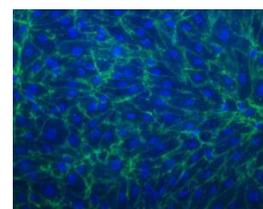
K10 epidermal differentiation



Vimentin



MUTZ-3 LC



Endothelial cells

## Application options compound:

- Topical
- Injection
- Systemic (in medium)

Time frame exposure: e.g. 2, 4, 8, 24 and 72 hrs

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## A-SKIN Contract Research Services

A-SKIN is a skin tissue engineering company culturing human skin, founded in 2006 as a spin-off company of the VU University Medical Center in Amsterdam. A-SKIN contract research services focuses on the development and usage of our broad range of in vitro human skin models. The skin models are an alternative for animal testing and can be used for screening of therapeutics and compounds, risk assessments, allergen prediction or sensitizing potential.