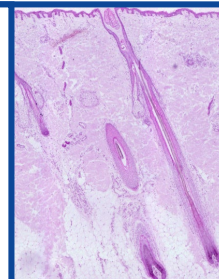


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# Atopic Dermatitis



"We combine  
our unique expertise,  
our project design creativity,  
and our passion to advance  
our clients' success in  
delivering novel and game-  
changing skin and hair  
research solutions"

President:  
Prof. Dr. Ralf Paus

## Monasterium Laboratory

Skin & Hair Research Solutions GmbH

Mendelstr. 17, 48149 Münster, Germany

Phone: +49 (0) 251 93264-458

Fax: +49 (0) 251 93264-457

Founder & CEO: Prof. Dr. Ralf Paus

[www.monasteriumlab.com](http://www.monasteriumlab.com)

For inquiries, please contact:

CEO:

Dr. Marta Bertolini (PhD)

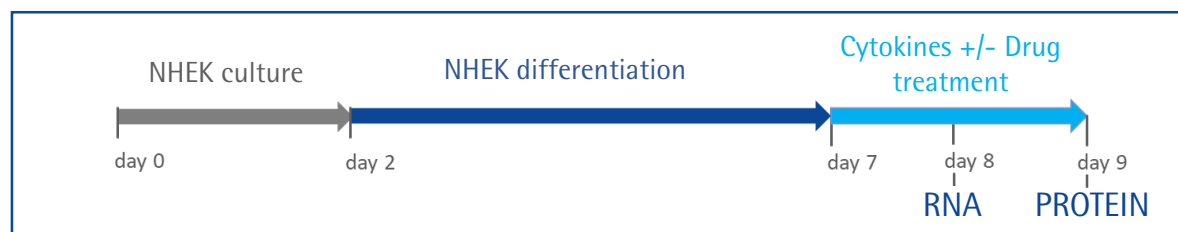
[m.bertolini@monasteriumlab.com](mailto:m.bertolini@monasteriumlab.com)

+ 49 (0)251 93263-080

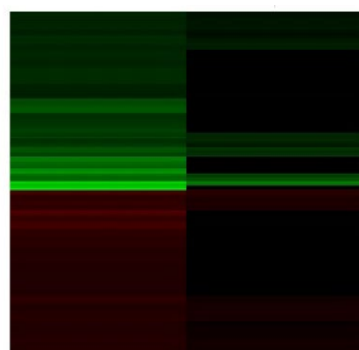
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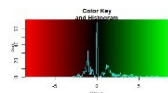
# Modeling atopic dermatitis-like responses in primary epidermal keratinocytes *in vitro*



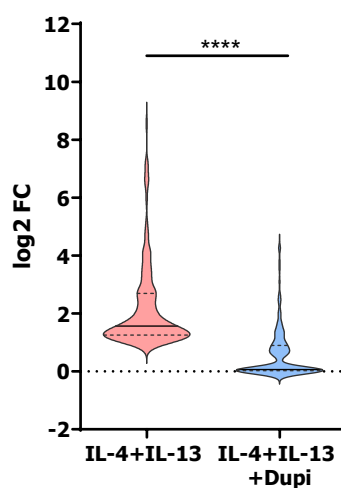
## Study Example: Dupilumab (Dupi) inhibits transcriptional changes induced by IL-4+IL-13



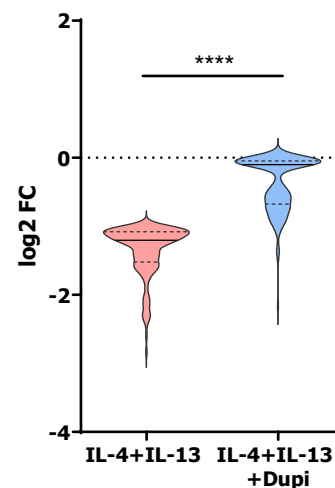
IL-4+IL-13 IL-4+IL-13+Dupi



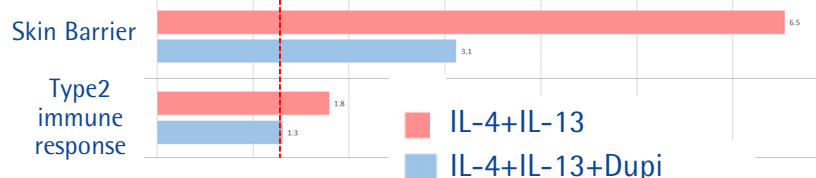
### IL-4 + IL-13 top markers UP



### IL-4 + IL-13 top markers DOWN



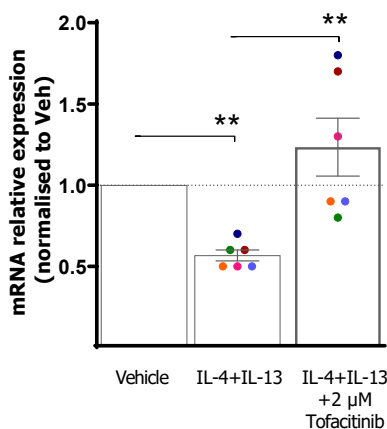
### GO BP terms



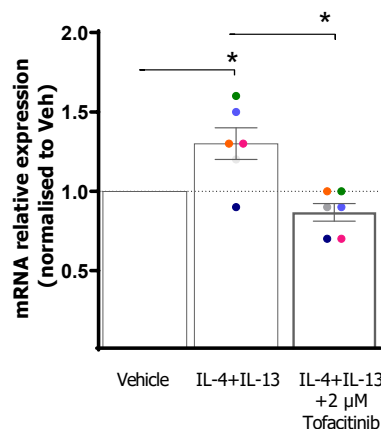
Gene expression analysis can be complemented by protein analysis (Western blot, FACS, immunocytochemistry)

## Study Example: Tofacitinib counteracts transcriptional changes on atopic dermatitis associated parameters

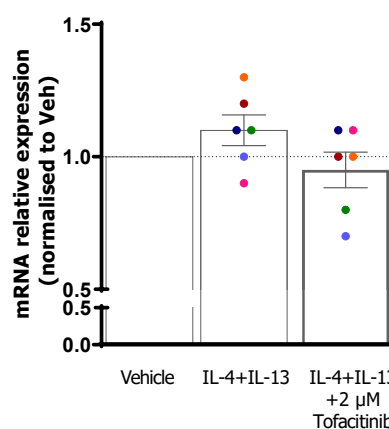
### FLG



### IL1A



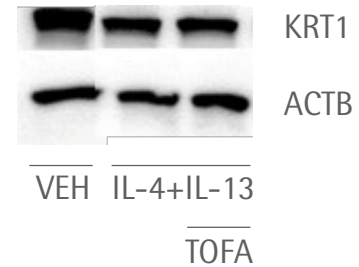
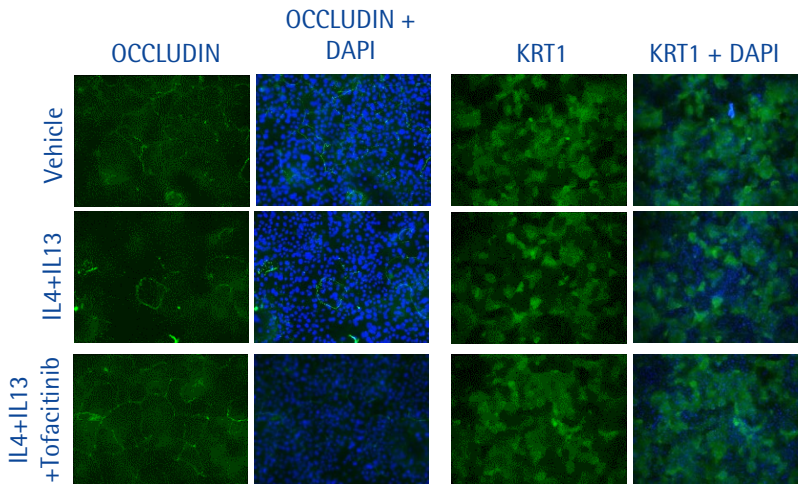
### TSLP



FLG: Filaggrin, TSLP: thymic stromal lymphopoietin.

# Modeling atopic dermatitis-like responses in primary epidermal keratinocytes *in vitro*

Study Example: Tofacitinib inhibits skin barrier impairment induced by IL-4+IL-13

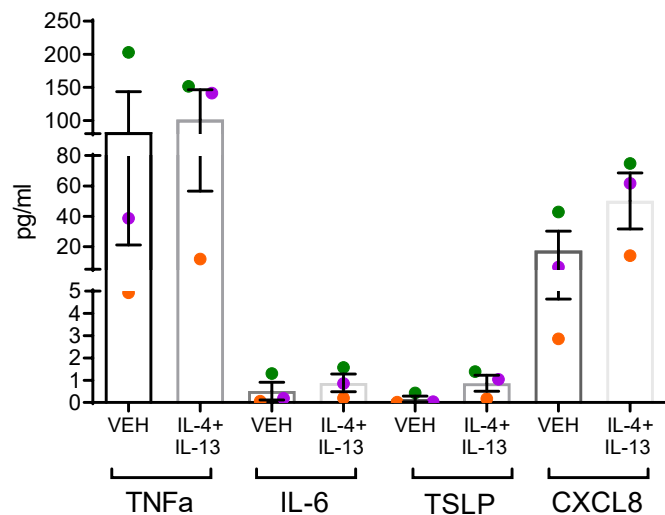


IL-4+IL-13 stimulation also induces the release of cytokines and chemokines by primary epidermal keratinocytes

Gene and protein expression analysis on keratinocytes can be complemented by measurements of cytokine/chemokine release into the medium

Tofa: Tofacitinib, i.e. JAK signaling inhibitor

Our models can be utilized also to identify new pathways involved in atopic dermatitis as well as investigating modes of action

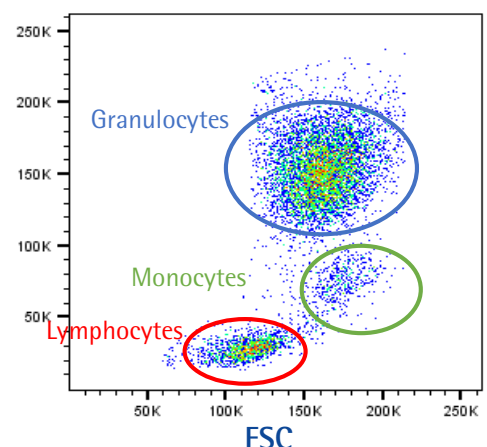
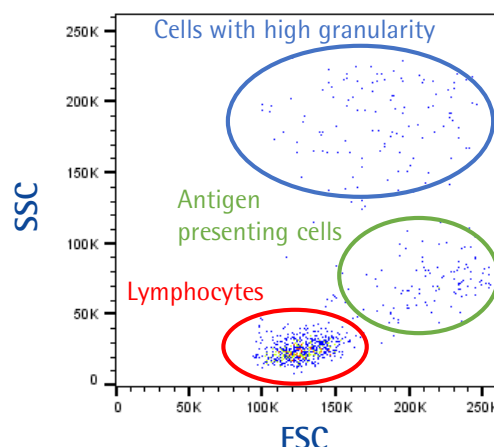


FACS analysis of CD45+ cells from human skin

FACS analysis of CD45+ cells from human whole blood

*In vitro* studies on immune cells isolated from skin or blood also available

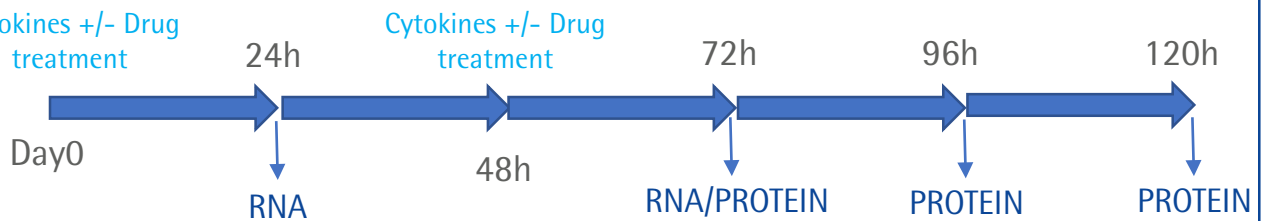
Blood and skin from HEALTHY INDIVIDUALS and atopic dermatitis PATIENTS



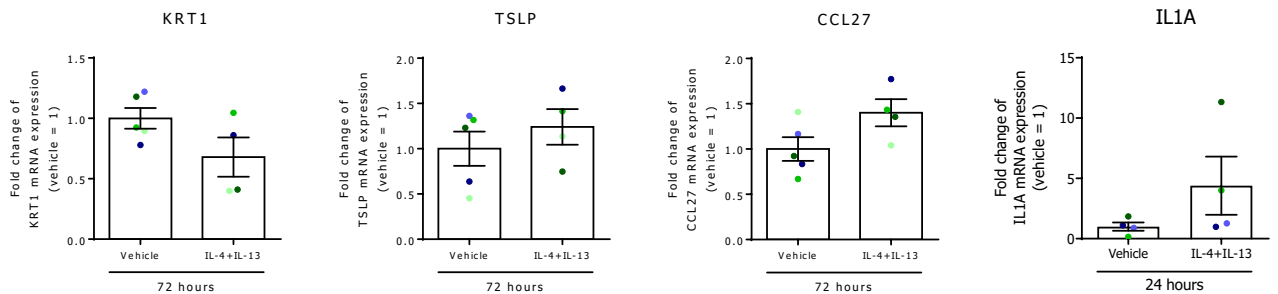
# Modeling atopic dermatitis-like responses in human HEALTHY skin *ex vivo*

Skin punches isolation  
start *ex vivo* culture

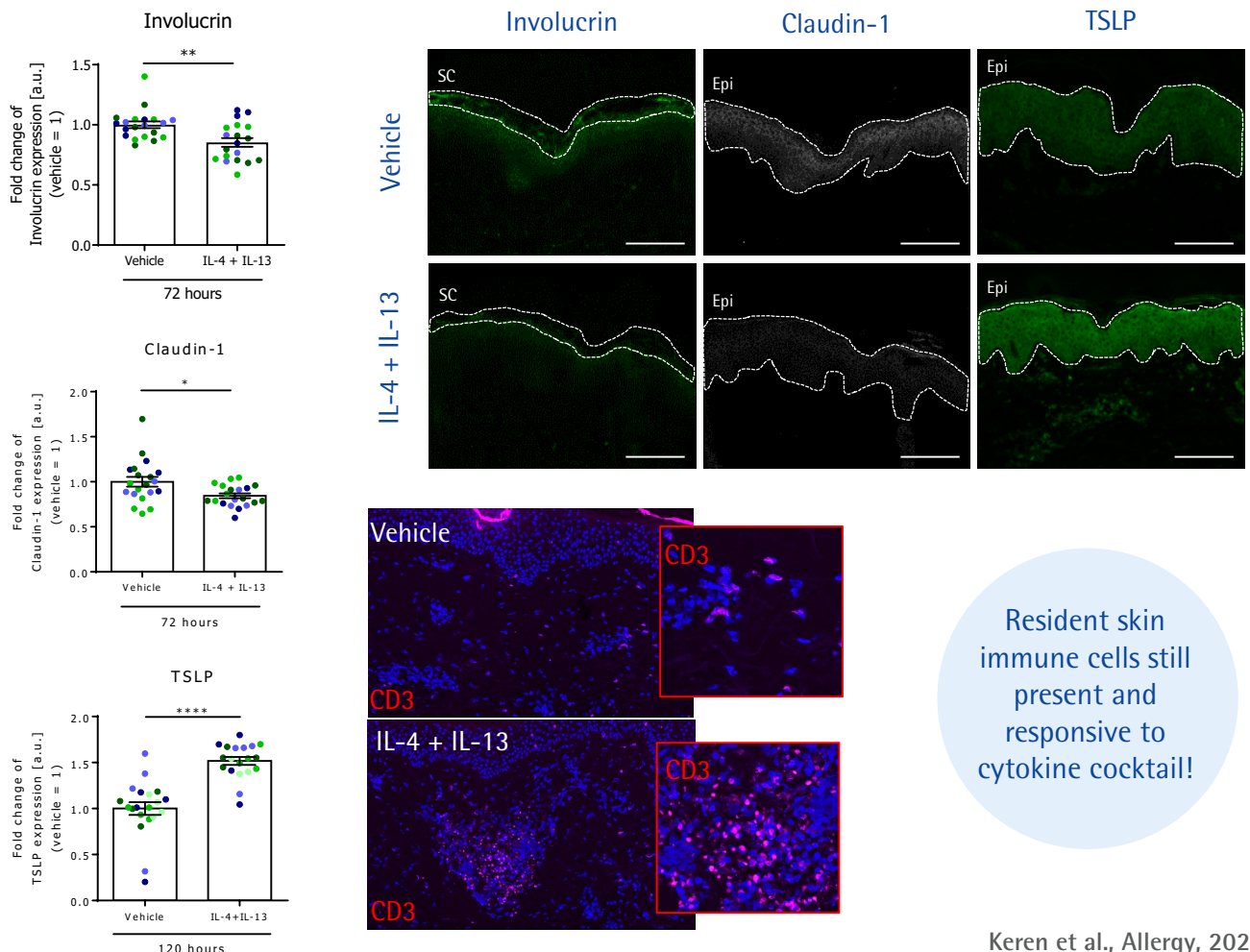
Cytokines +/- Drug  
treatment



**IL-4+IL-13 stimulation induces gene expression changes associated with skin barrier impairment and pro-inflammatory responses**



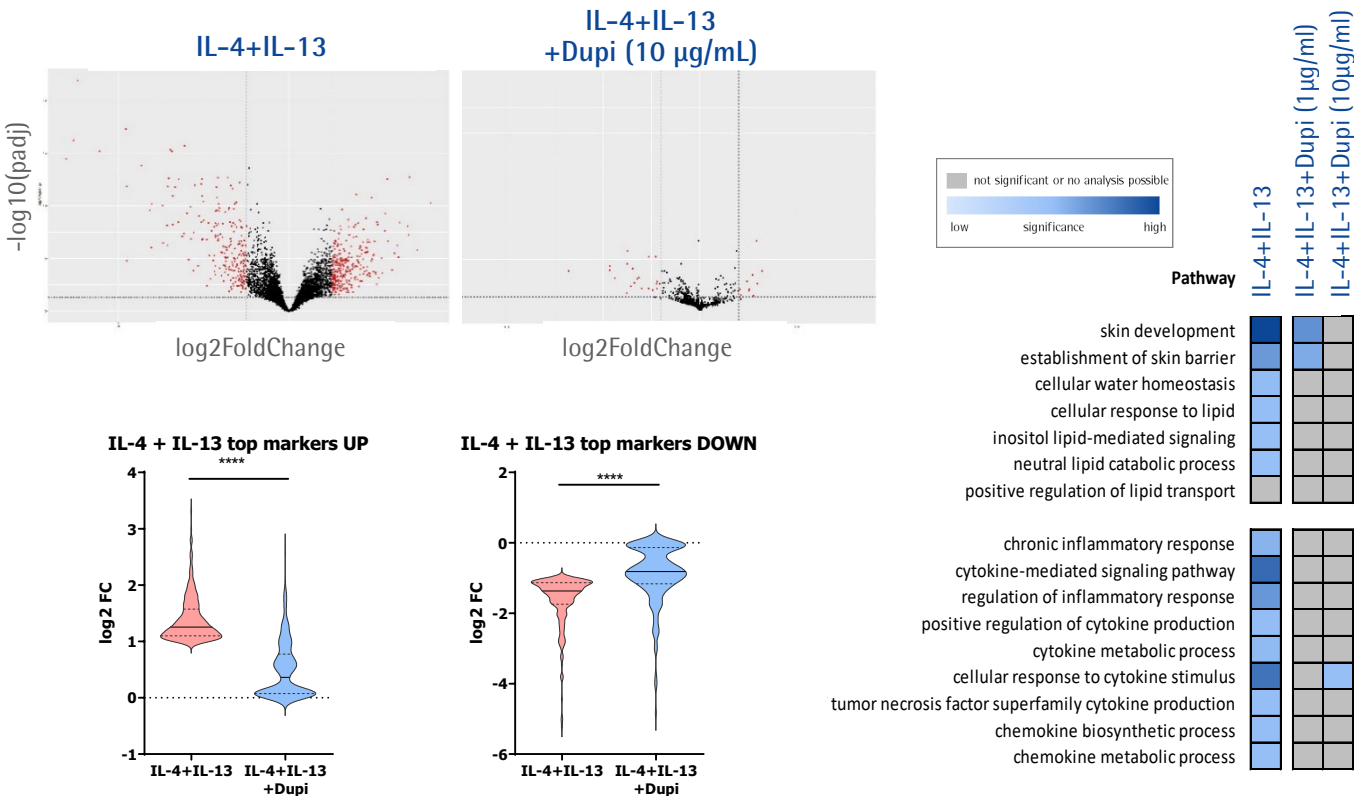
**IL-4+IL-13 stimulation impairs skin barrier, induces pro-inflammatory responses, and expansion of resident cells**



Resident skin  
immune cells still  
present and  
responsive to  
cytokine cocktail!

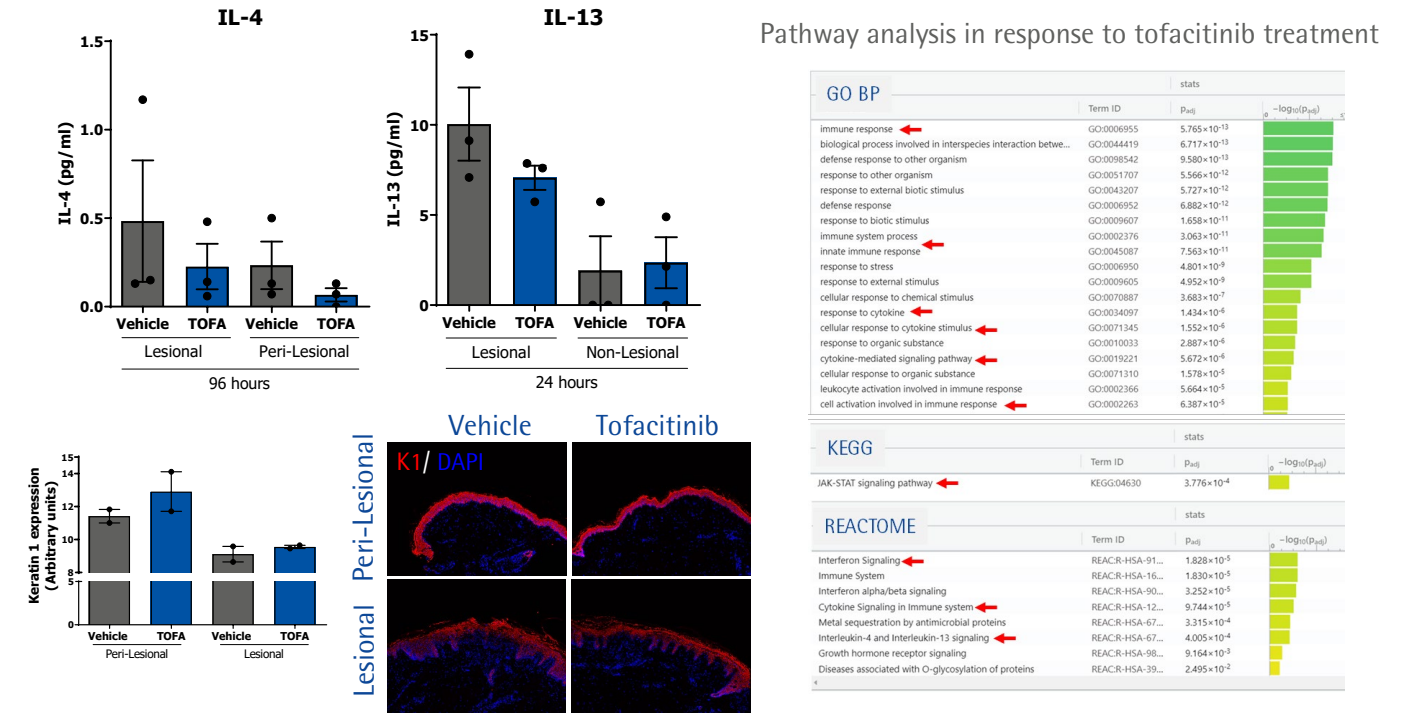
# Modeling atopic dermatitis-like responses in human HEALTHY skin *ex vivo*

Study Example: Dupilumab (Dupi) inhibits transcriptional changes induced by IL-4+IL-13



## Investigating the effect of a drug on lesional skin from atopic dermatitis patients *ex vivo*

Study Example: Tofacitinib reduces cytokine release, up-regulates skin barrier-associated markers, and ameliorates phenotype in lesional skin from selected patients

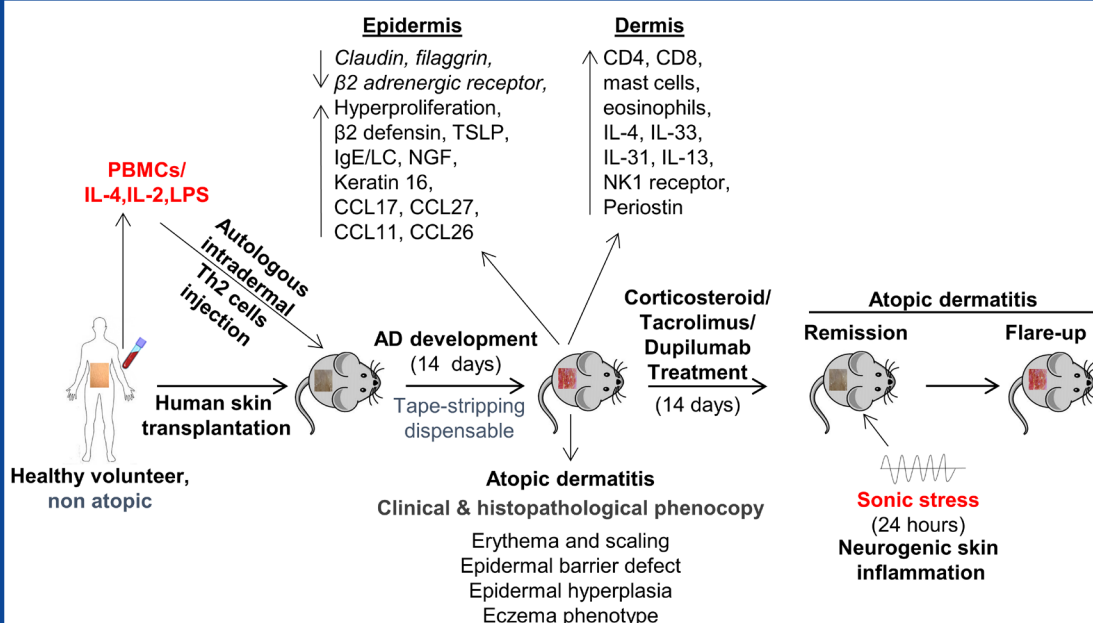




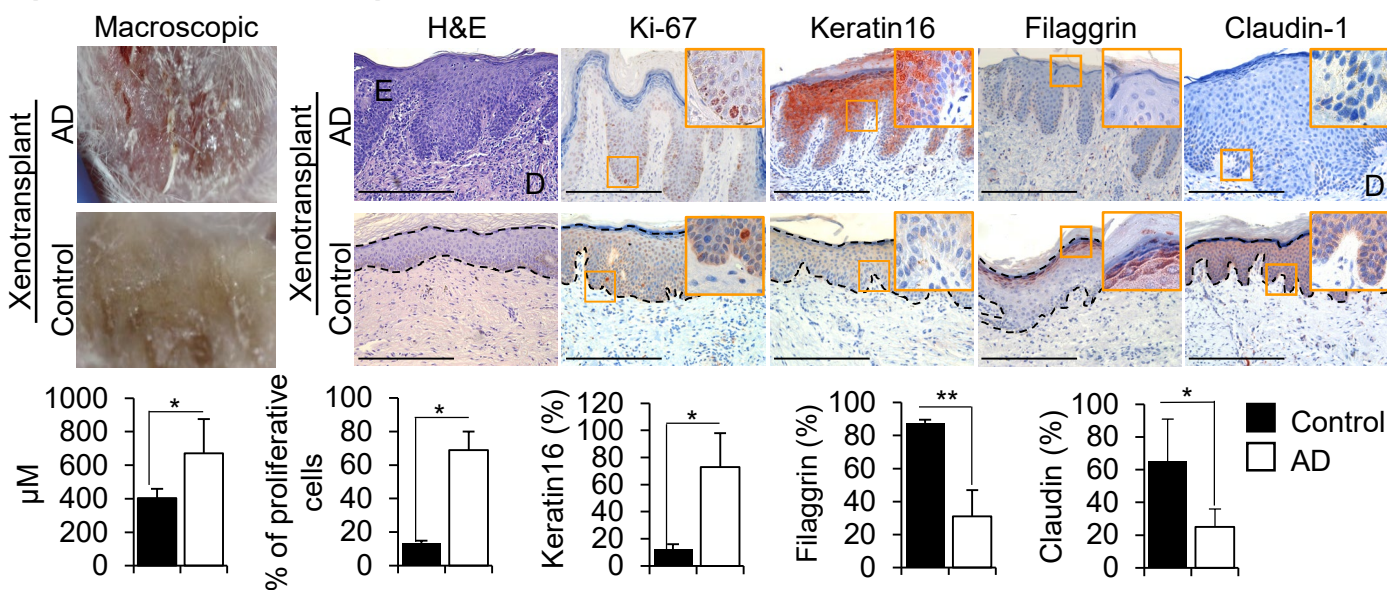
# Investigating the effect of a drug on inhibiting atopic dermatitis-like phenotype *in vivo*: Humanized mouse model

Selection of our publications:  
Gilhar et al., Exp Dermatol. 2021; Keren et al., Allergy 2023

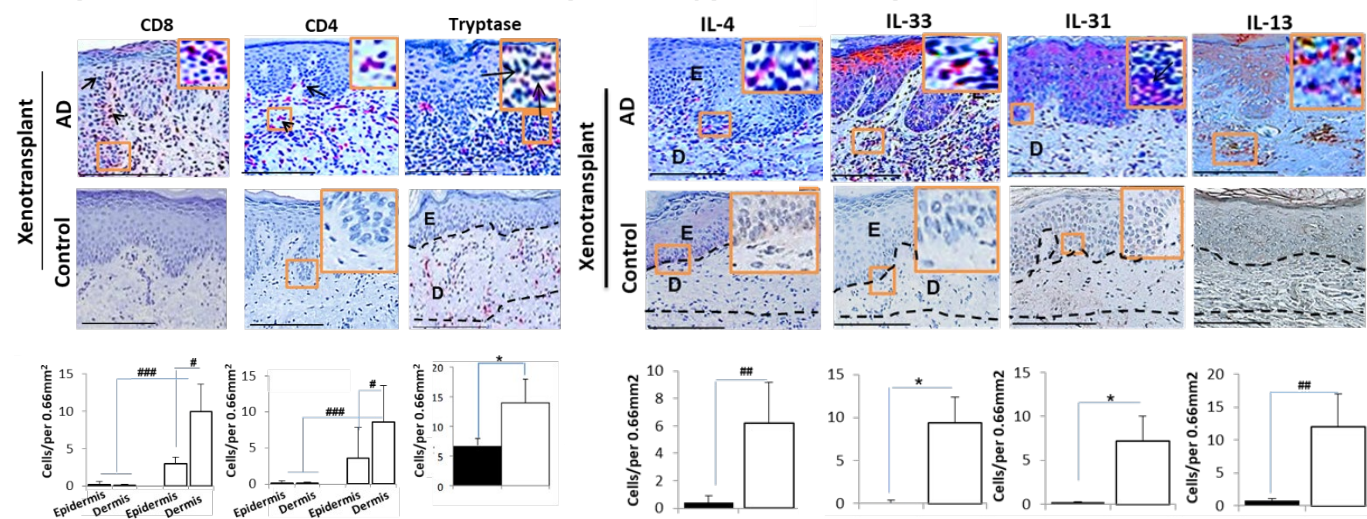
Experimental setup and read-out parameters can be customized



## Epidermal barrier impairment

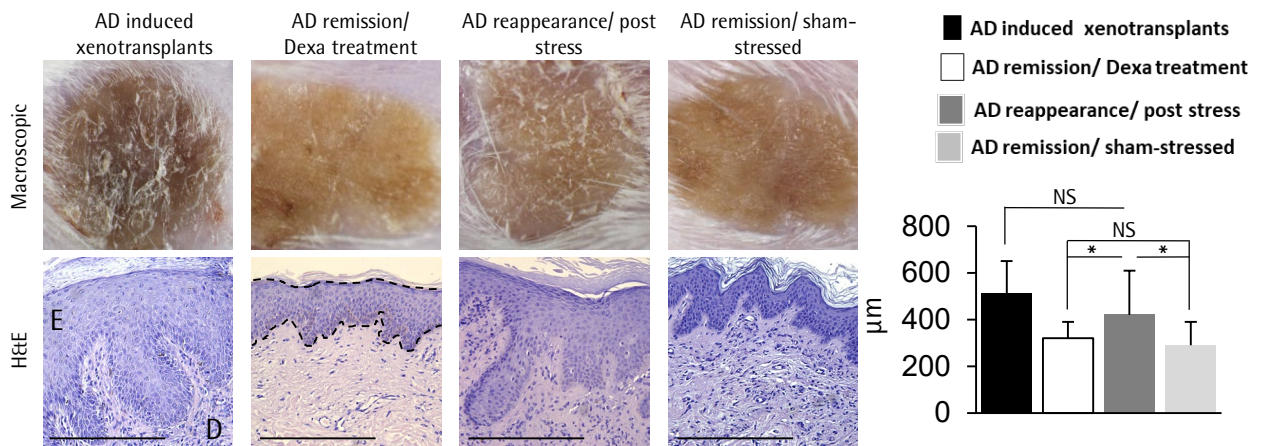


## Atopic dermatitis-like immune phenotype and response

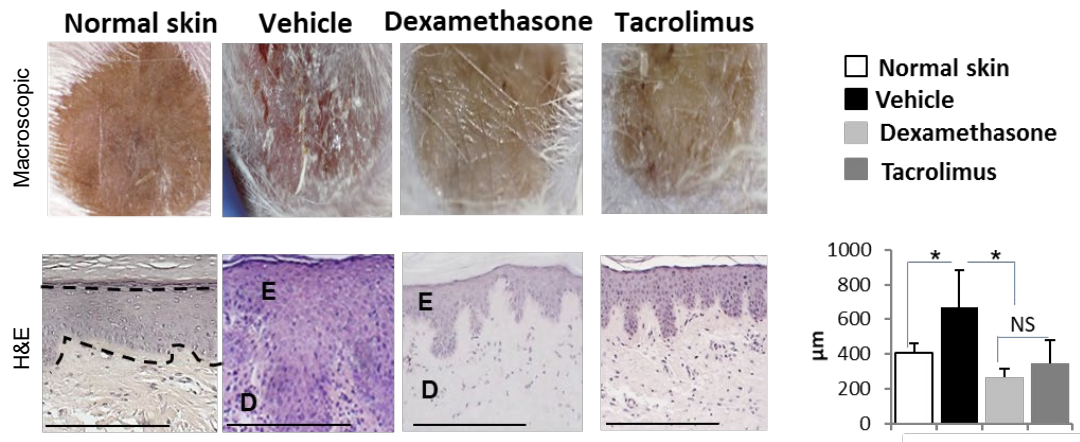


# Investigating the effect of a drug on inhibiting atopic dermatitis-like phenotype *in vivo*: Humanized mouse model

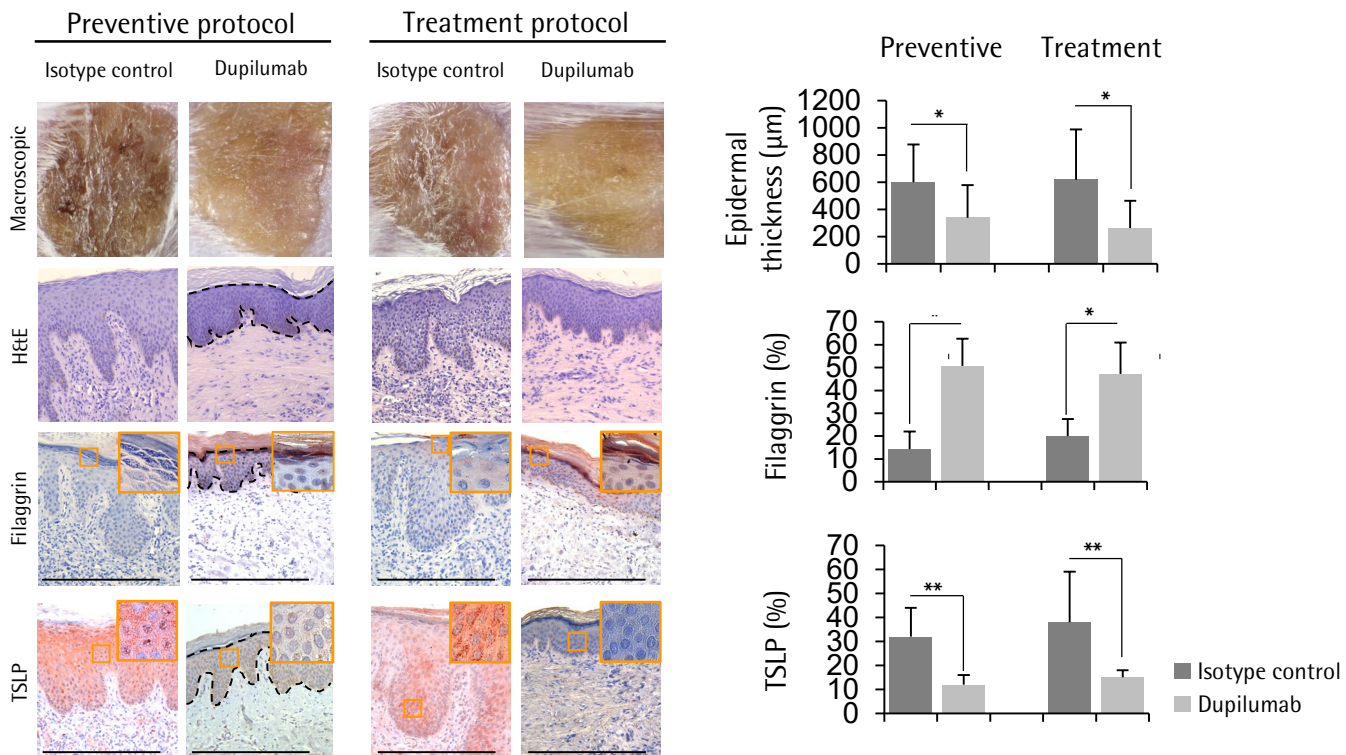
## Relapse of lesions after stress induction



## Amelioration of disease after treatment with dexamethasone, and tacrolimus



## Prevention and rescue of diseased phenotype with Dupilumab





# WHY US?



**MONASTERIUM  
LABORATORY**

A Q I M A Life Sciences Company

Great network of dermatologists and plastic surgeons collecting samples from healthy and diseased skin

Our vision is to provide our clients and partners with the highest quality research in investigative dermatology and trichology – from basic science to translational applied and contract research of high relevance for clinical applications.

World-class scientific leadership & international team

Clinically-relevant *ex vivo* and *in vivo* models

Strong academic background & publication record

## What we can do for our clients:

- Conceptualize & build proof-of-concept studies
- Carry out full service portfolio for pre-clinical skin & hair research (*in vitro/ex vivo* assays, and humanized mouse models)
- Investigate side effects in the skin or hair follicle
- Establish novel cutting edge methodologies and techniques
- Design tailor-made & customized assays for all needs
- Identify, characterize, or validate novel targets and therapeutics for skin & hair disorders
- Discover mechanistic action stories, biomarkers & predictors of response
- Conduct investigator initiated skin & hair clinical trials
- Provide access to human healthy & diseased skin and hair specimen
- Prepare comprehensive project reports & manuscript drafts

Our ambition is to establish and refine research techniques:  
Advanced Methodology Program

Global client list & testimonials

Investigative dermatology:  
Acne Vulgaris, Atopic Dermatitis, Psoriasis, Alopecia Areata, Androgenic Alopecia, Hidradenitis Suppurativa, Vitiligo, Chronic Itch, Prurigo Nodularis, etc.

Biobank:  
Full access to skin & hair samples (patients & healthy subjects)

Exceptional state-of-the-art research technology

We are supported by world-wide recognized experts in dermatology