# HUMAN EX VIVO MODELS TO INVESTIGATE COMPOUNDS FOR THE MANAGEMENT OF OILY SKIN AND ACNE VULGARIS

Acne vulgaris, commonly known as acne, is an inflammatory skin condition affecting mainly adolescents. It is caused by obstruction of the hair follicles resulting from dysfunctional keratinocyte differentiation leading to over-production of sebum by sebaceous glands and dysbiosis. The primary underlying cause is hormonal dysfunction but additional factors influencing severity of the condition have been also described (e.g. diet or changes in the composition of skin and hair follicle microbiota.)

Our method: *ex vivo* organ culture
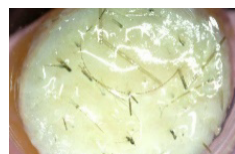
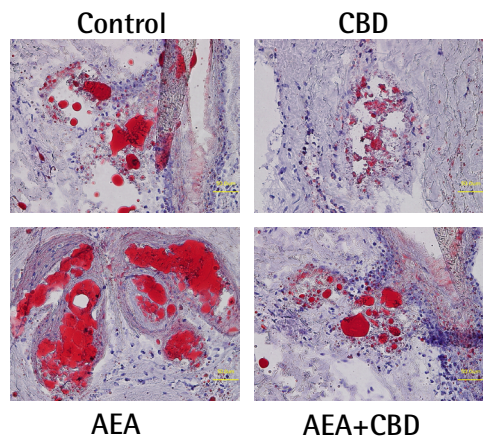Human full thickness skin with terminal hair follicles and sebaceous glands
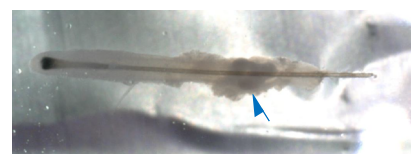
Human microdissected full-length hair follicles with sebaceous glands

Claim substantiation:
Reduction of inflammation & regulation of sebum production

INVESTIGATING THE EFFECT OF TEST COMPOUNDS ON SEBUM PRODUCTION AND SEBOCYTE FUNCTION IN HUMAN (SCALP) SKIN *EX VIVO*

CBD treatment reduces the lipid content of sebaceous glands in human skin ex vivo
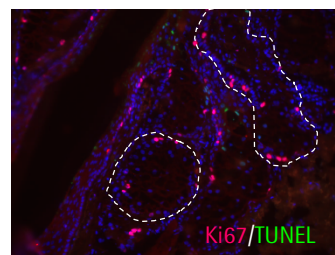

Control   CBD

AEA   AEA+CBD

Signal Intensity (AU) vs AEA(µM): 0, 30 — control, CBD

** ** **

(Olah et al., J Clin Invest 2014)

AEA (anandamide): an endocannabinoid known to increase sebum production; CBD: Cannabidiol (CBD)
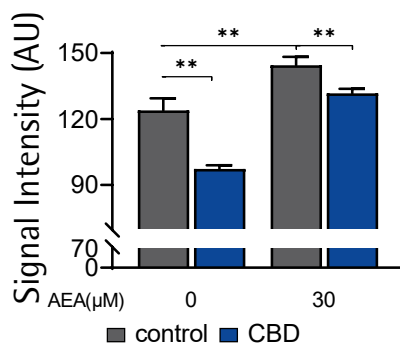
Read-out parameters for sebocyte function


Ki67/TUNEL

Analysis of sebocyte proliferation (Ki67) and apoptosis (TUNEL)
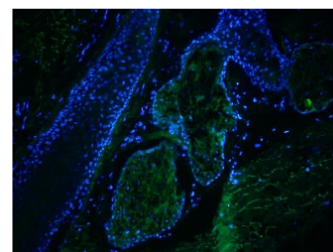
Analysis of Keratin 7 expression, an early sebocyte differentiation marker, in sebaceous glands

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INVESTIGATING THE EFFECT OF A TEST COMPOUND ON MICROBIOME COMPOSITION IN HUMAN HAIR FOLLICLES *EX VIVO*

Compound X reduces the presence of Cutibacterium acnes

relative abundance (%): D0, Vehicle, Compound X

Cutibacterium acnes
Staphylococcus epidermidis
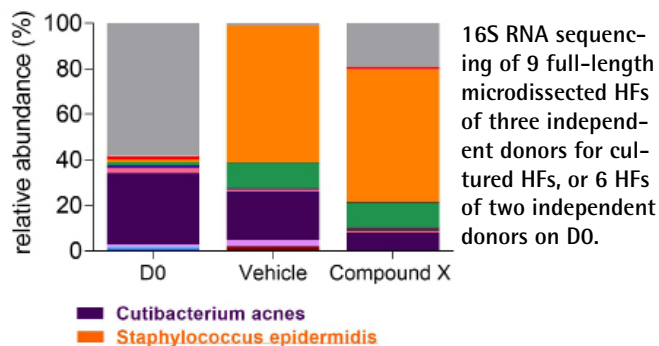
16S RNA sequencing of 9 full-length microdissected HFs of three independent donors for cultured HFs, or 6 HFs of two independent donors on D0.

Selections of our publications: Olah et al., J Clin Invest 2014; Hinde et al., Exp Dermatol. 2013; Géczy et al., J Invest Dermatol. 2012; Schneider and Paus Int J Biochem Cell Biol. 2010

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- Androgen response
- Lipid analyses (MS/LS)

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Contact us
for a customized study

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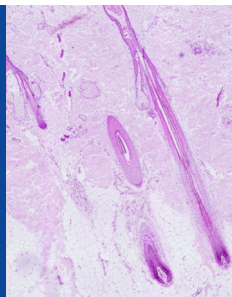**Dr. Janin Edelkamp (PhD)**
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- Comprehensive project reports & manuscript drafting and submission

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