

# ACNE-PRONE SKIN : combined approaches for full objectivation



**Acne** is a common inflammatory skin condition involving epidermis and pilosebaceous units. Increased sebum production by sebocytes and the consequent *Cutibacterium acnes* dysbiosis are considered as crucial factors in the development of acne. This anaerobic bacterium of the cutaneous flora feeds on excess of sebum that release short-chain fatty acids responsible for the local inflammatory state and acne spots. Local anti-acne treatments targeting the microflora and/or the production of sebum can reduce and prevent acne spots. In order to study both aspects, StratiCELL offers two adapted models, a 3D reconstructed epidermis colonized by a living *C. acnes* strain on one hand and culture of derived **sebocytes** on the other hand.

## Two models related to acne

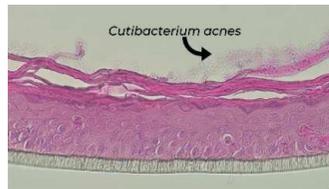
One model replicates the colonization of skin by *Cutibacterium acnes*, and the other model replicates sebum over-production in sebocytes.

### 1. Model and tests related to *Cutibacterium acnes*

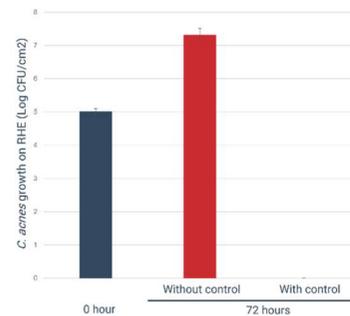
**NHEK-CA:** Normal Human Epidermal Keratinocytes (NHEK) infected by a reference strain of *Cutibacterium acnes* (CA, phylotype IA1) in the culture media.

**RHE-CA:** Reconstructed Human Epidermis (RHE) topically colonized by a reference strain of *Cutibacterium acnes* (CA, phylotype IA1).

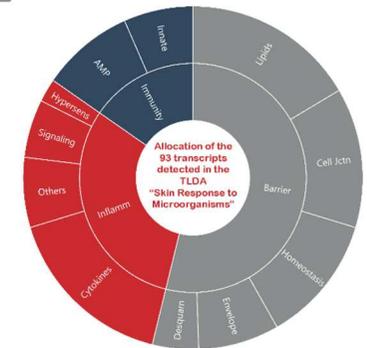
#### 1. Morphological analysis of RHE-CA after Hemalun/Eosin staining.



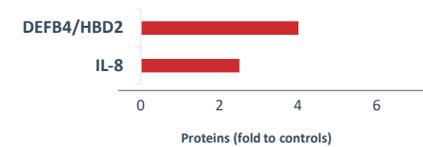
#### 2. Adhesion and growth of *C. acnes* on RHE by C.F.U. (Colony Forming Units) counting. Positive control: *C. acnes* growth inhibitor.



#### 3. Skin response to *C. acnes* colonization by gene expression (RT-qPCR) : individual TaqMan probes or 93 genes TaqMan Low Density Array (TLDA – “Skin Response to Microorganisms”).



#### 4. Quantification of biomarkers by ELISA.



### 2. Model and test related to sebum production

**iPSC-SEB:** monolayer sebocytes (SEB) cell line derived from human induced Pluripotent Stem Cells (iPSC), induced by testosterone for lipid production.

#### 1. Quantification of lipid production by Nile-Red staining. Positive control : finasteride.

