# MicroBIOS Platform : combining 3D skin model with microbial strains

The microbial flora and its diversity, also called microbiota, is beneficial and even essential to maintaining our good health. StratiCELL is studying commensal and opportunistic pathogens strains of the skin including ***Staphylococcus epidermidis*** and ***S. aureus***, ***Cutibacterium acnes***, and probiotics such as ***Lactobacillus plantarum***.

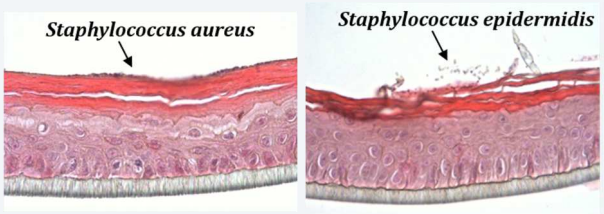
StratiCELL is able to co-cultivate its reconstructed human epidermis (RHE) with these microorganisms, to monitor the growth and viability of these strains over time by counting colony units (CFU), and to study the biological response of the epidermis in presence or absence of active ingredients. StratiCELL is also operational in the evaluation of the epidermal benefits of certain probiotics applied topically to a reconstituted human epidermis (barrier efficacy, release of antimicrobial peptides, study of cell junctions, activation of the innate response of the epidermis and TLR receptors, etc.). The panel of studied micro-organisms species is continuously extending, as well as their roles in specific skin conditions such dermatitis, acne or dandruff.

## SKiN MODELS:

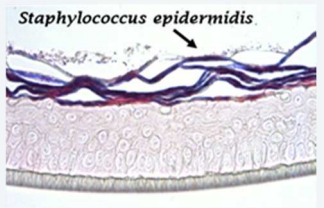
- Microbial cultures, liquid and solid media :
  - *Staphylococcus epidermidis, Staphylococcus aureus, Cutibacterium acnes* (IA1), *Lactobacillus plantarum*
- Individual- or co-infections in ratios, on top of reconstructed human epidermis (RHE)

## ENDPOiNTS:

- Bacterial adhesion on top of RHE, by colony units counting (CFUs)
- Bacterial growth on top of RHE, by colony units counting (CFUs)
- RHE tissue morphology : Hemalun&Eosin staining, GRAM staining
- RHE response to colonization : immunolabelling and expression of key epidermal genes

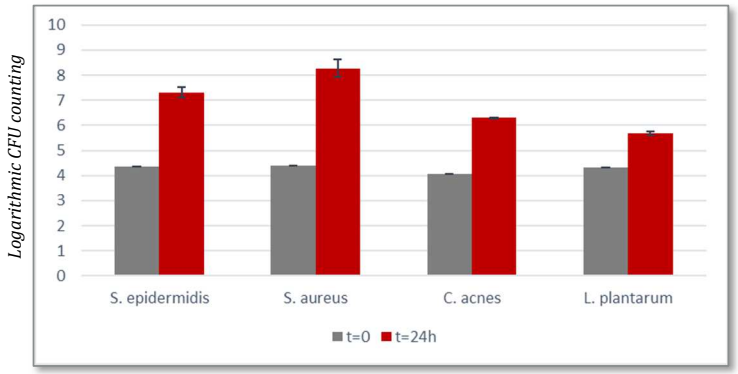



Hemalun&Eosin staining

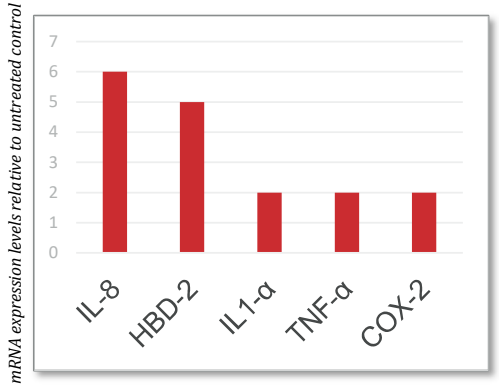



Gram staining

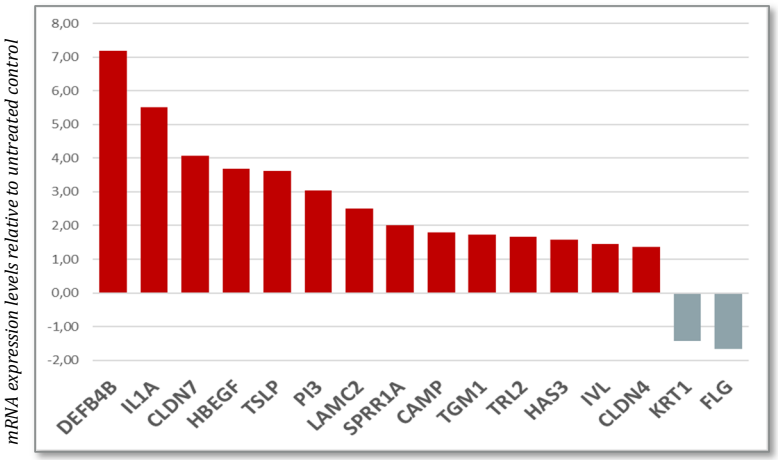
*Positive evolution of **bacterial growth** on epidermis during 24 hours, by colony counting (CFUs).*




*Effect of **C. acnes growth** on the expression of inflammatory genes of colonized reconstructed epidermis.*




*Effect of **S. aureus growth** on reconstructed epidermis gene expression, compared to non-infected control. Mainly, bacterial growth induces over-expression of epidermal function and immunomodulators.*

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