



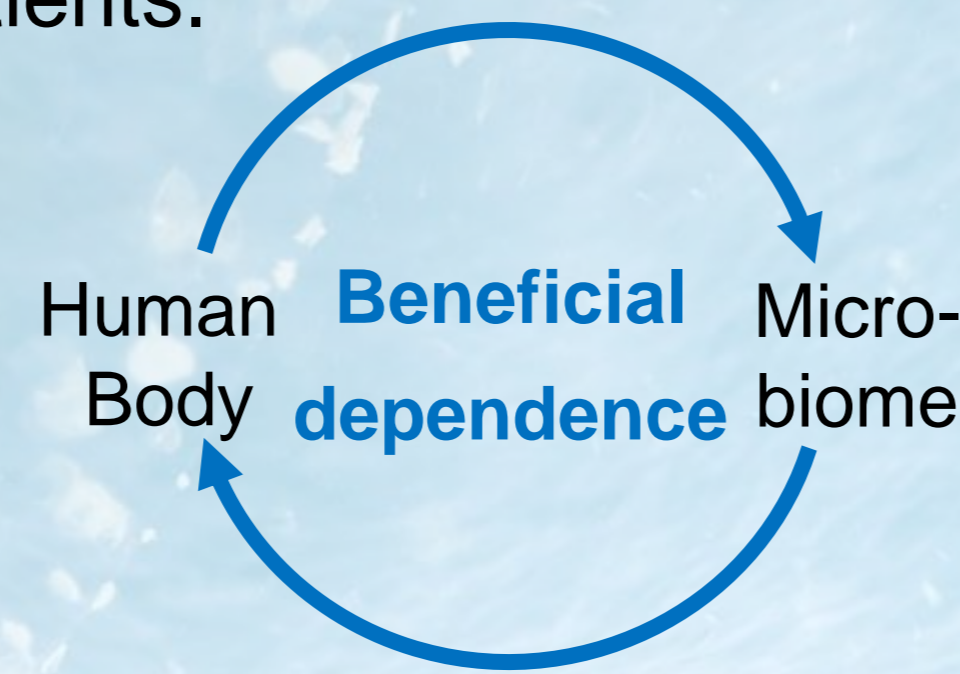
# Beneficial impact of mildly heat treated *Lactobacillus plantarum* HEAL19 on health and microbiome of atopic dermatitis prone skin

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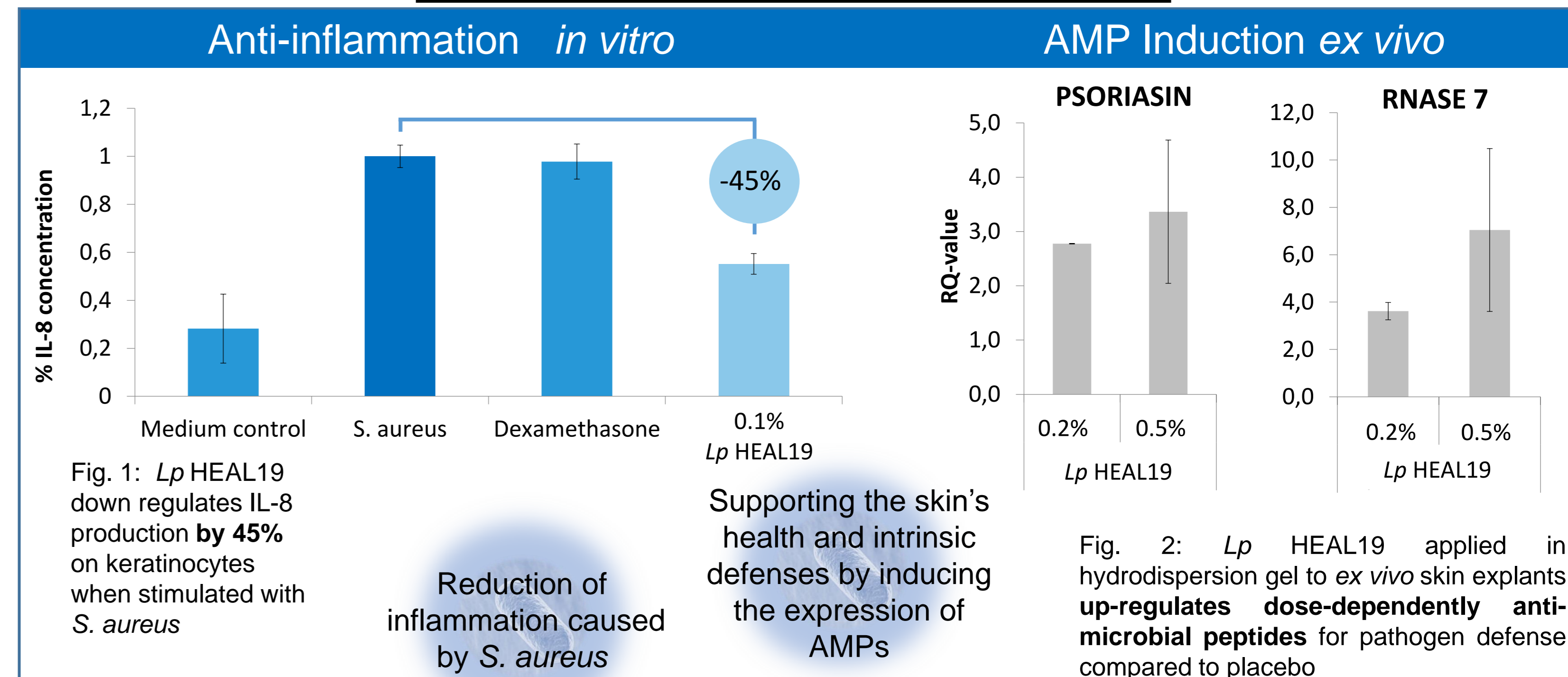
## Introduction:

Atopic dermatitis is a common chronic inflammatory skin disease and is characterized by cracked, swollen, red, and itchy skin (Fyhrquist, 2019). The dominant genus in AD flares of the microbiome is *Staphylococcus*, especially *Staphylococcus aureus* (Kong, 2012). To maintain the natural skin microbiome and barrier, new strategy need to be investigated to break the vicious circle of a weak skin barrier and the increase in *S. aureus* population in AD patients.

We investigate whether the mildly heat treated probiotic bacterium *Lactobacillus plantarum* HEAL19 (*Lp* HEAL19) can support atopic dermatitis prone skin and its microbiome.



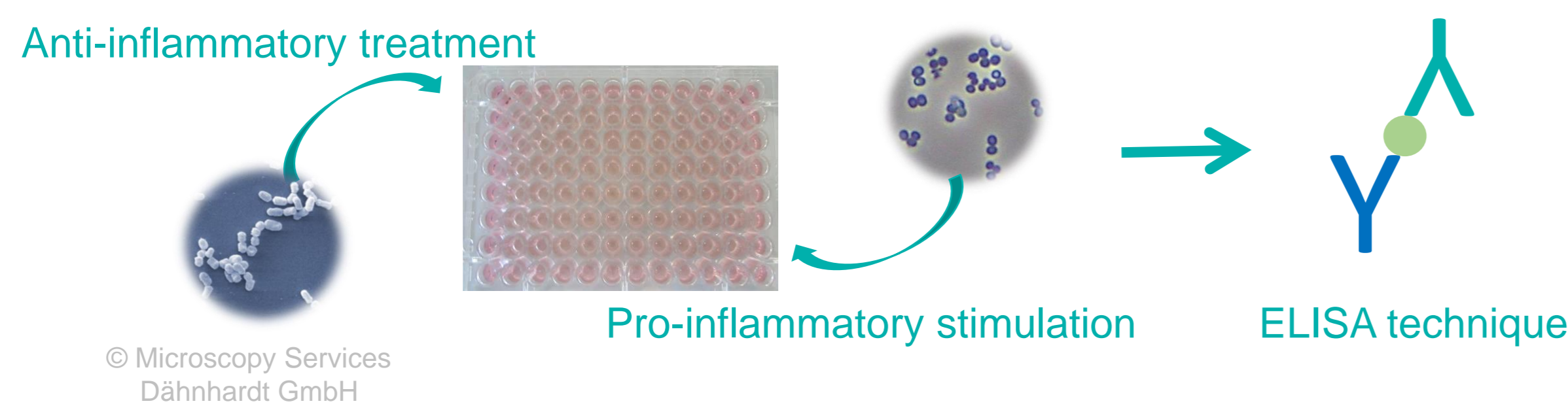
## Results & Discussion:



## Materials & Methods:

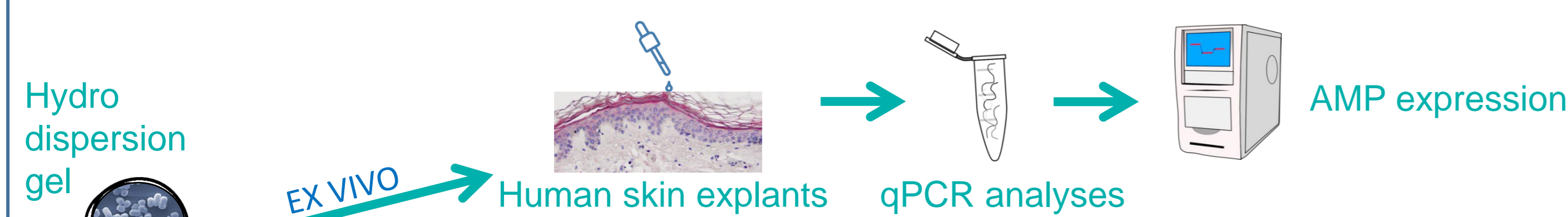
### IN VITRO - Anti-inflammation

Investigation of the ability of heat treated *Lp* HEAL19 to reduce production of the inflammation marker IL-8 induced by *S. aureus* on keratinocytes



### EX VIVO – Filaggrin production and AMP induction

- Investigation of the production of filaggrin (FLG) as a marker of skin barrier fortification in *ex vivo* human skin explants (data not shown)
- Detection of anti-microbial peptide (AMP) expression levels in human *ex vivo* skin explants treated topically with a hydro dispersion gel containing heat-treated *Lp* HEAL19

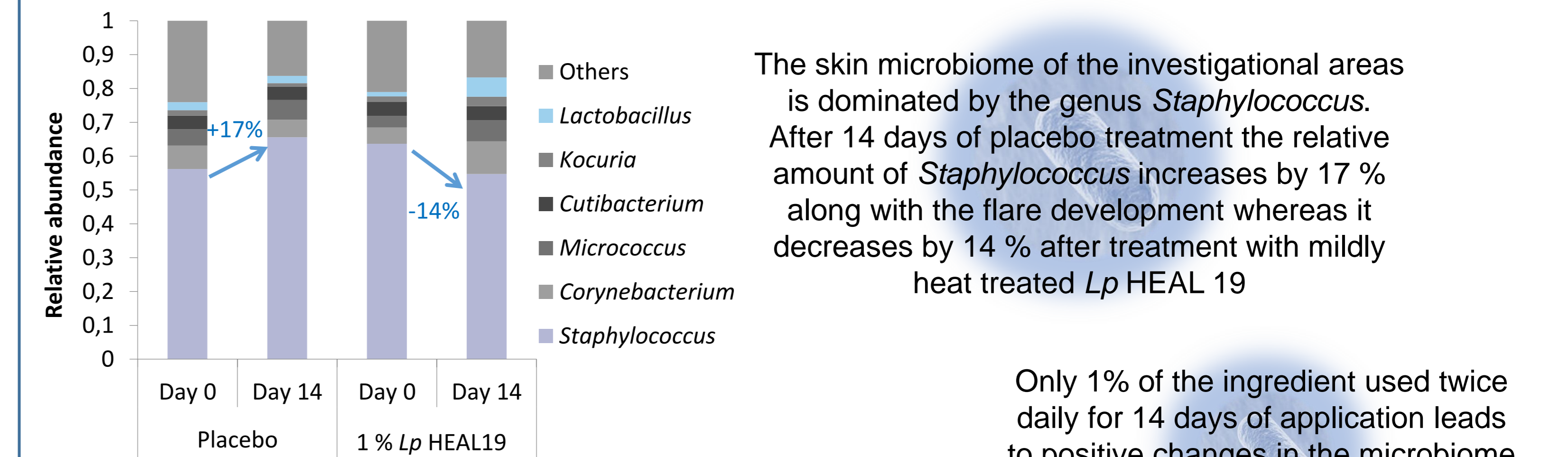
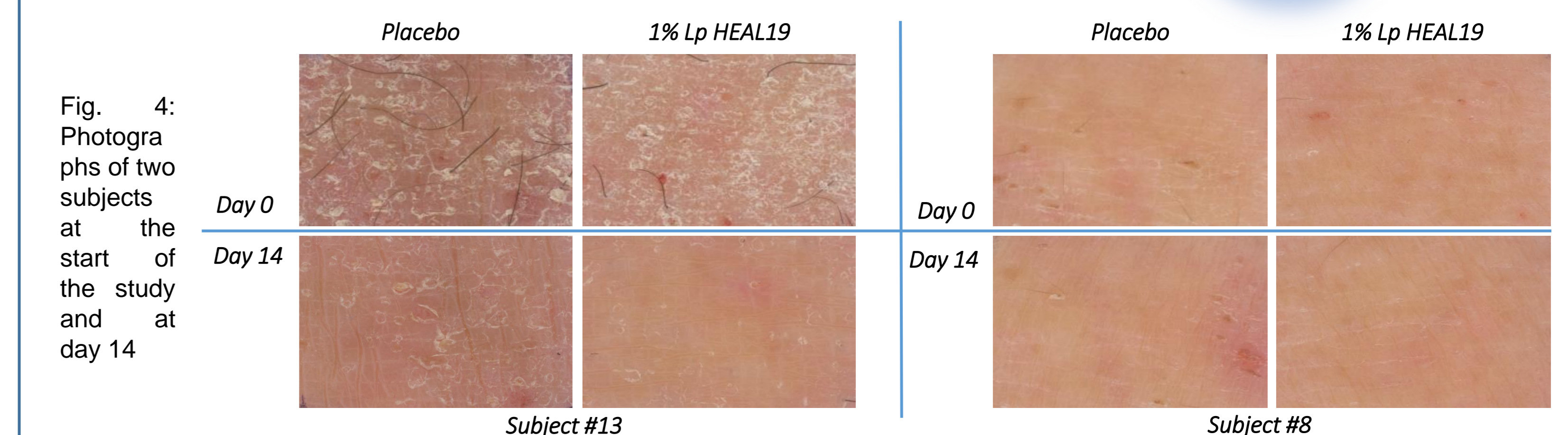
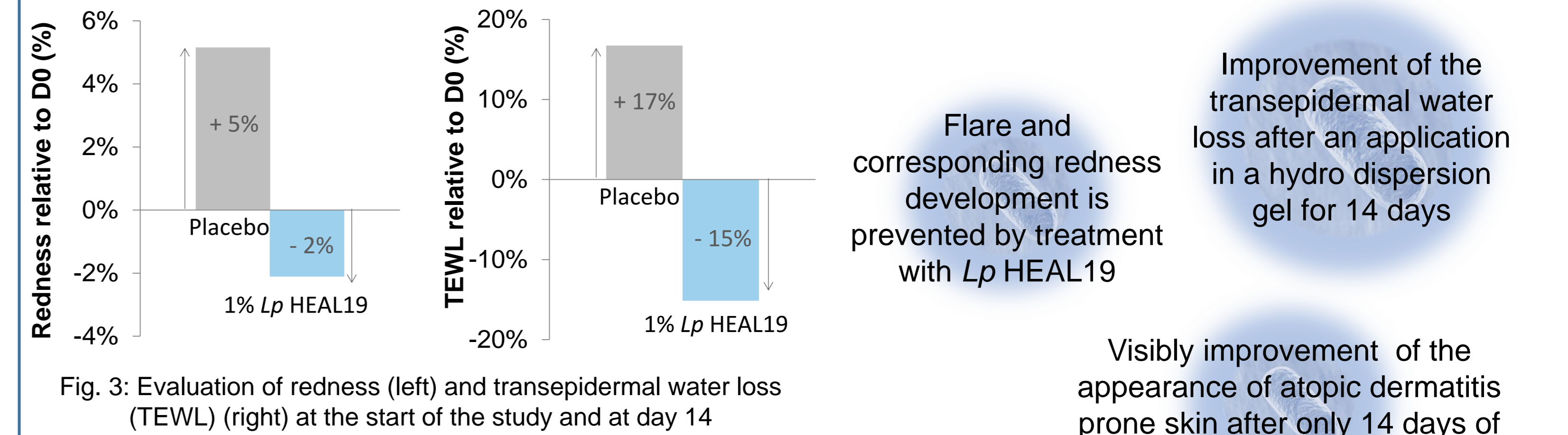


### IN VIVO – Study with subjects suffering from mild to moderate atopic dermatitis

Performance of a *in vivo* study with 13 subjects suffering from mild to moderate atopic dermatitis ( $15 \leq \text{SCORAD} \leq 40$ ) that have two symmetric atopic dermatitis lesions

- SCORAD (SCORing Atopic Dermatitis) is a clinical scale used to assess the extent and severity of eczema  
Based on the six clinical characteristics used in SCORAD: erythema, edema/papulation, oozing/crust, excoriation, lichenification and dryness
- Visual aspect and evaluation of redness by visual evaluation
- Evaluation of Transepidermal Water Loss
- Microbiome sampling

### In vivo study with subjects suffering from mild to moderate atopic dermatitis



## Conclusions:

The use of mildly heat treated *Lp* HEAL19 supports the skin's health and prevents the development of an AD flare as it reduces the skin redness, strengthens its barrier, and improves its intrinsic defenses. All without having an impact on the microbiome itself, which in turn allows the microbiome to recover naturally.

The understanding of the interaction between our skin and our skin's microbiome will revolutionize the future cosmetic ingredient developments.

## Acknowledgements:

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## References:

- Fyhrquist N, Muirhead G, Prast-Nielsen S, Jeanmougin M (2019) Microbe-host interplay in atopic dermatitis and psoriasis. *Nature Com* 10:4703
- Kong HH, Oh J, Deming C, Colan S, Grice EA, Beatson MA, Nomicos E, Polley EC, Komarow HD, NISC Comparative Sequence Program, Murray PR, Turner ML, Serge JA (2012) Temporal shifts in the skin microbiome associated with diseases flares and treatment in children with atopic dermatitis. *Genome Research* 22:850-859