



# Biomap

Biomarkers in Atopic Dermatitis and Psoriasis

## How does our skin microbiome contribute to eczema?

**Virtual webinar:**

**Developing better treatments for eczema and psoriasis: what we've learned from the BIOMAP research  
25<sup>th</sup> March 2025**

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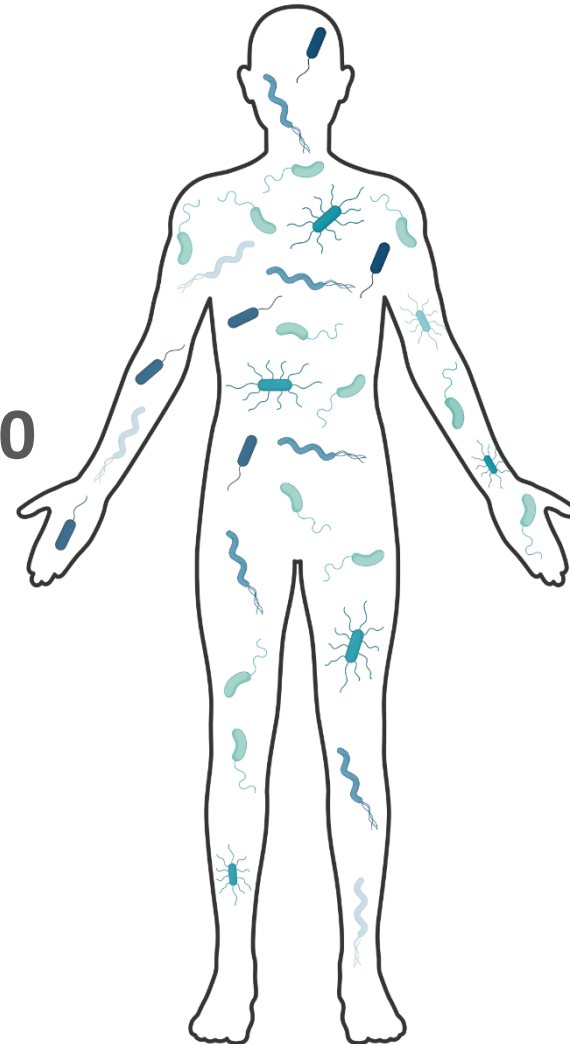
Christian-Albrechts-Universität zu Kiel



## What is the Skin Microbiome?

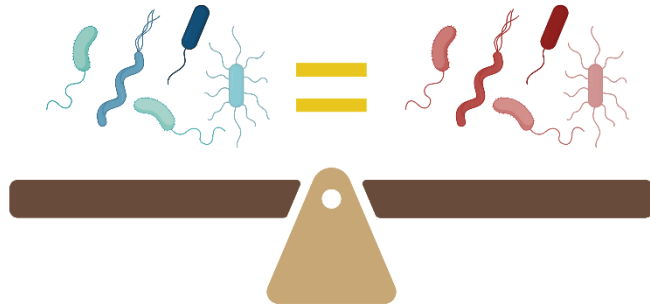
**Our skin is home to trillions of microbes!**

**1.000.000.000.000**



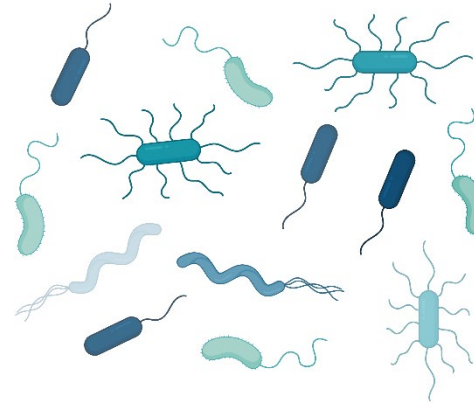
**Bacteria,  
Fungi,  
Viruses**

## What Happens in Healthy Skin?



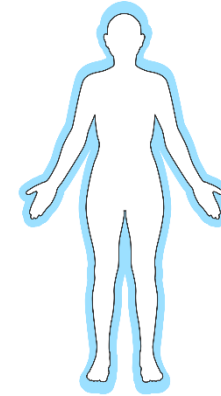
### Keeping the Balance

Good bacteria help fight harmful bacteria, preventing infections



### Strength through Diversity

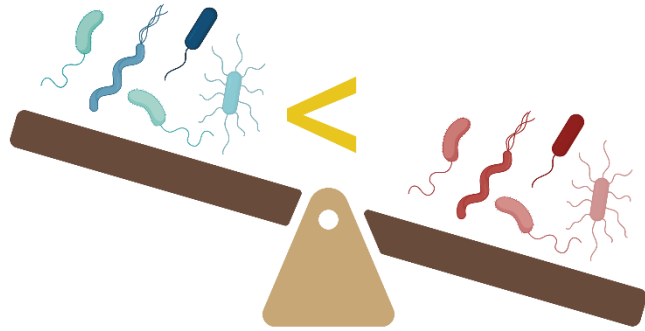
Diverse microbes  
Strong skin barrier that locks in moisture



### Inactive Immune System

When the microbiome is in harmony, the immune system stays inactive.

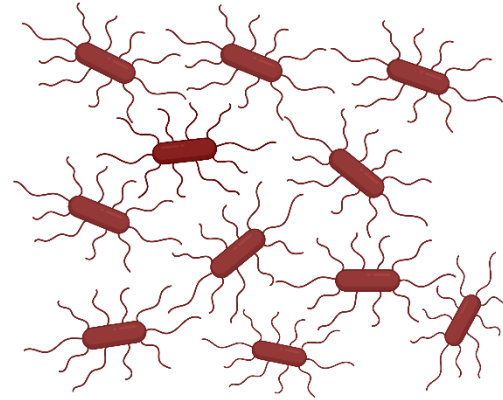
## What Happens in Eczema?



### Loss of good bacteria

Overshoot of  
harmful bacteria

### **Dysbiosis**

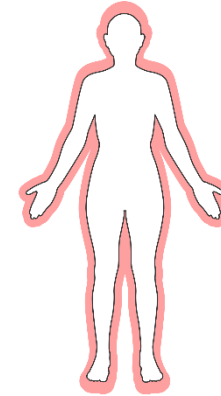


### Loss of Diversity

Weaker skin barrier

Moisture loss

More allergens  
enter

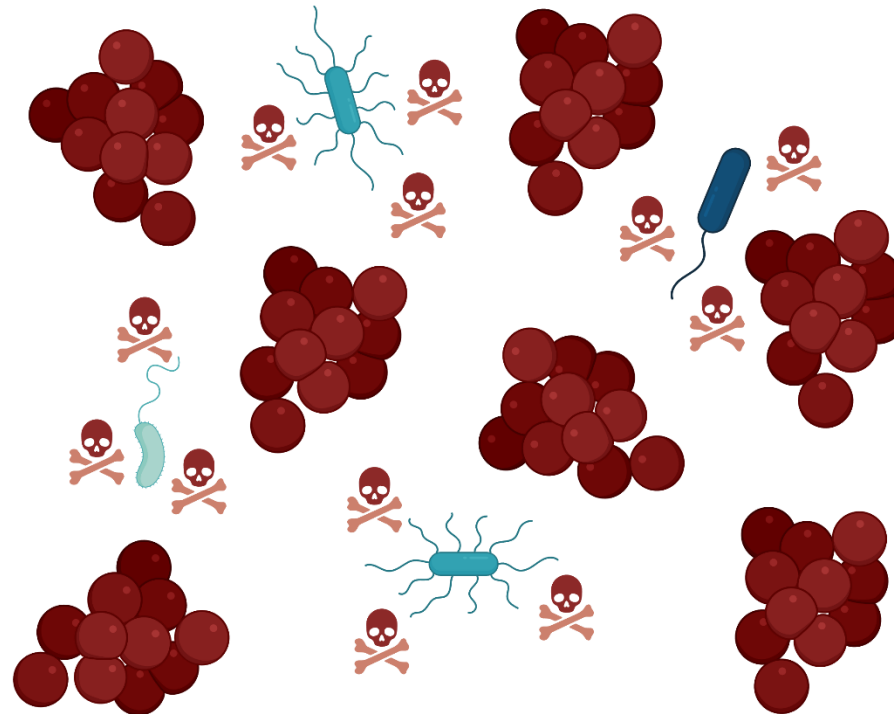


### Overactive immune system

Microbiome  
imbalance causes  
more inflammation  
and itching

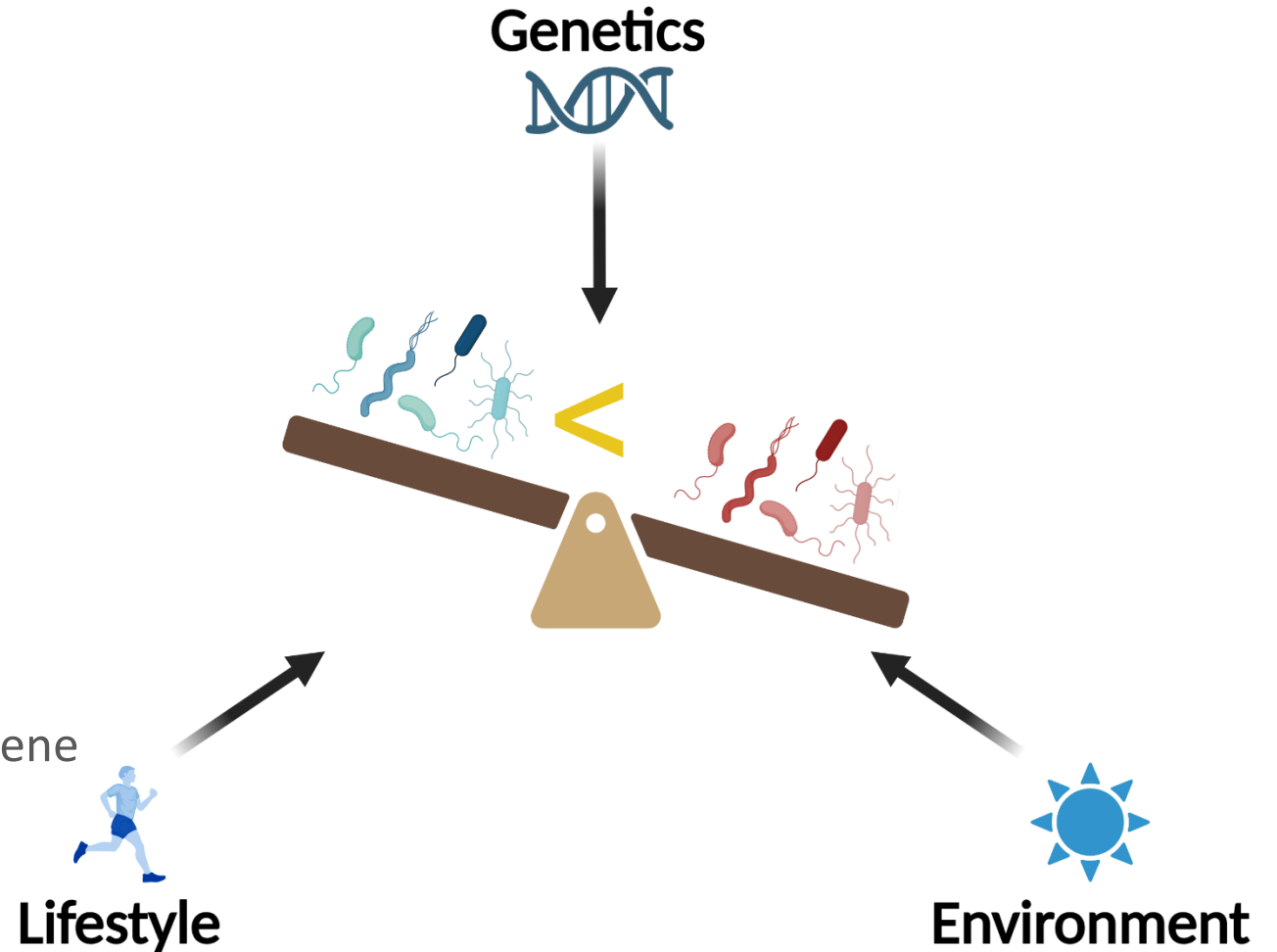
## The Role of *Staphylococcus aureus*

- Many individuals with eczema have too much *S. aureus* on their skin.
- *S. aureus* releases toxins that increase inflammation and itching and kill beneficial bacteria.
- *S. aureus* forms biofilms (protective layers), making treatment harder.



## What Causes Microbiome Imbalance?

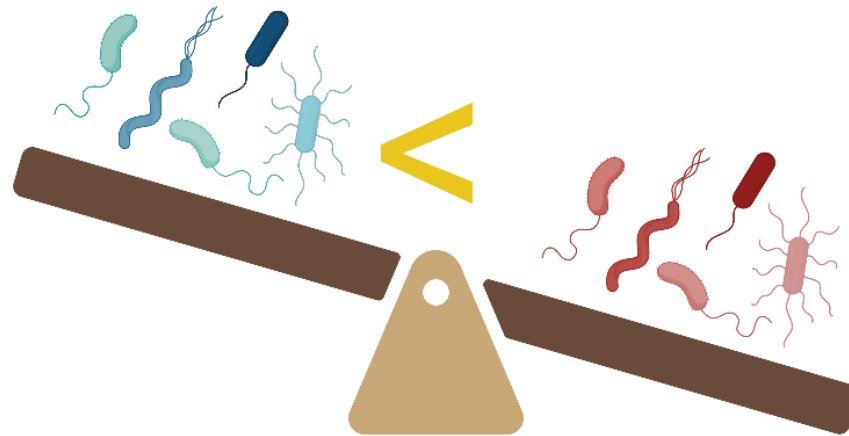
- **Genetics**  
Increased risk for eczema
- **Environment**  
Pollution, climate, UV exposure, and allergens
- **Lifestyle**  
Skincare, diet, physical activity and hygiene



## Can We Restore Balance?

### Kill Bad Bacteria

- Antimicrobial treatments
- Enzyme creams and specialised viruses



### Replace Missing Bacteria

- Microbiome transplants
- Personalized therapy, pre-selected bacteria

### Add Good Bacteria

- Probiotics
- Topical spray (*Roseomonas*), oral probiotics

### Support Good Bacteria

- Microbe-friendly skincare
- Prebiotic creams, gentle skincare (i.e. avoid parabens)

## Summary

- **The Skin Microbiome Matters**

A **healthy microbiome** protects the skin; in eczema, this balance is **disrupted**.

- ***Staphylococcus aureus* Plays a Key Role**

**Too much *S. aureus*** worsens inflammation, damages the skin barrier, and makes treatment harder.

- **Many Factors Influence the Microbiome**

i.e. **Genetics, Environment and Lifestyle**

- **Restoring Balance**

**New and emerging therapies** recognize the microbiome as a treatable target.

**Antimicrobial, microbiome transplant, probiotic, prebiotic therapies and gentle skincare** support beneficial microbes.



## Acknowledgements

- Work package 4 — Host-Microbiome Interaction
- Organisation Team and Sanofi
- Public Involvement Group
- People with eczema contributing to BIOMAP



“The main aim of the IMI project BIOMAP is to improve the lives of patients [...]”

BIOMAP related studies and further details

