

Microbiome: Market Insights and the role of DSM



Microbiome Beauty

One of the sub-trends DSM has been monitoring within the Healthy Beauty trend





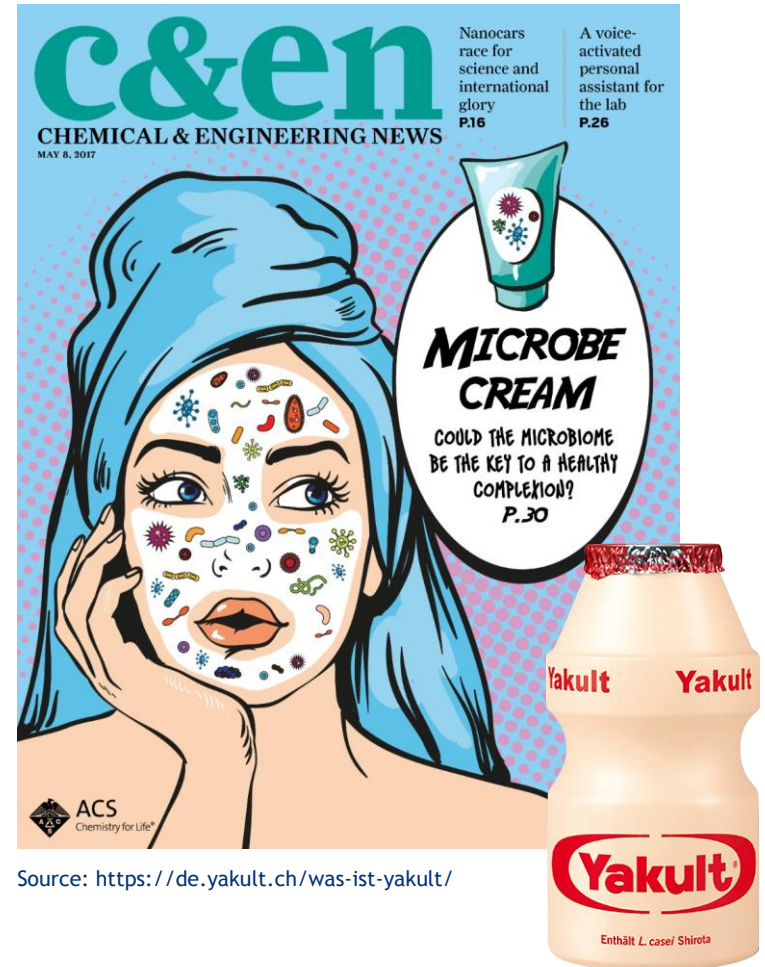
**Healthy
Beauty**

**Microbiome
Beauty**

What is the Skin Microbiome?

- An “ecological community of commensal, symbiotic and pathogenic microorganisms”
- All plants and animals, from simple life forms to humans, live in close association with microbial organisms.
- The relationship with their host is called *mutualistic* when organisms perform tasks that are known to be useful for the host, *parasitic*, when disadvantageous to the host.
- Food products that act on the gut microbiome are an established trend

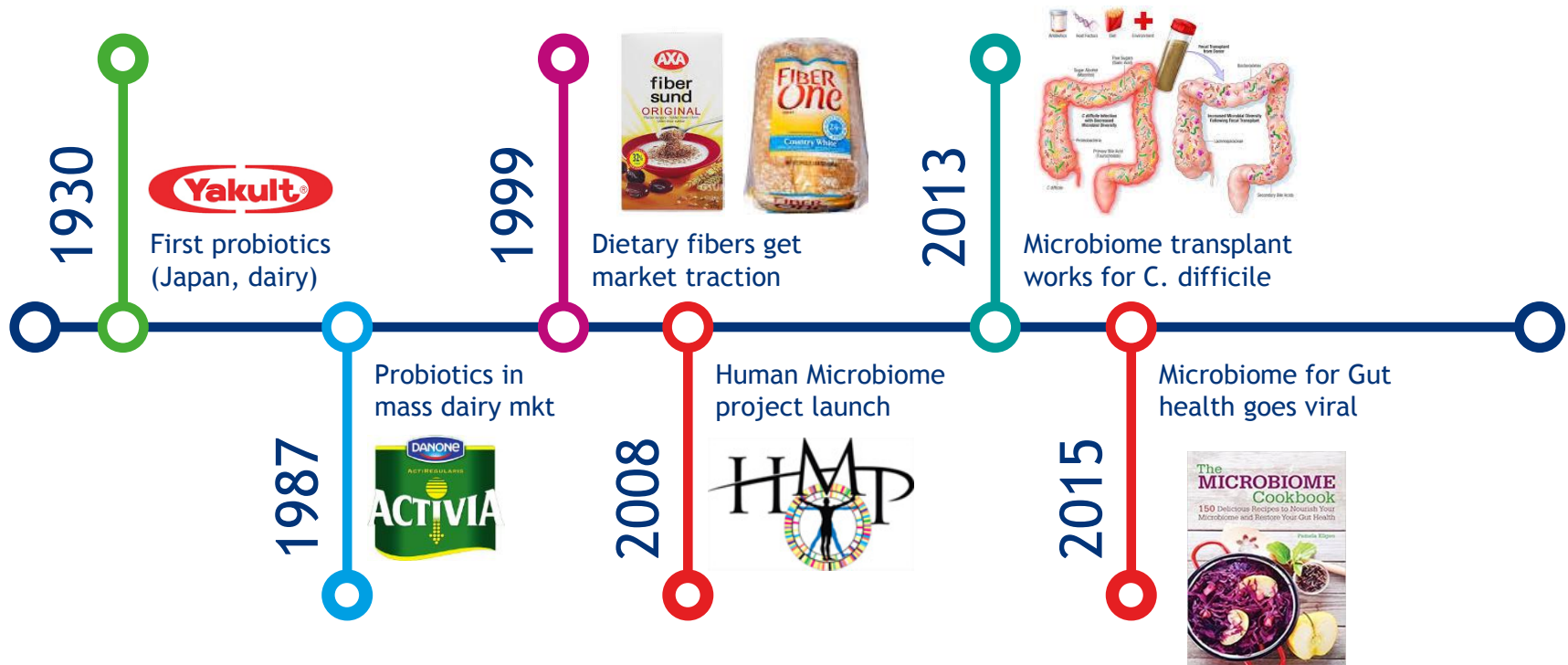
Source: C6eN Magazine, May 8 2017



Source: <https://de.yakult.ch/was-ist-yakult/>

The human Microbiome

A topic for Health and Nutrition for decades; in recent years, the topic has become of primary importance in the food industry

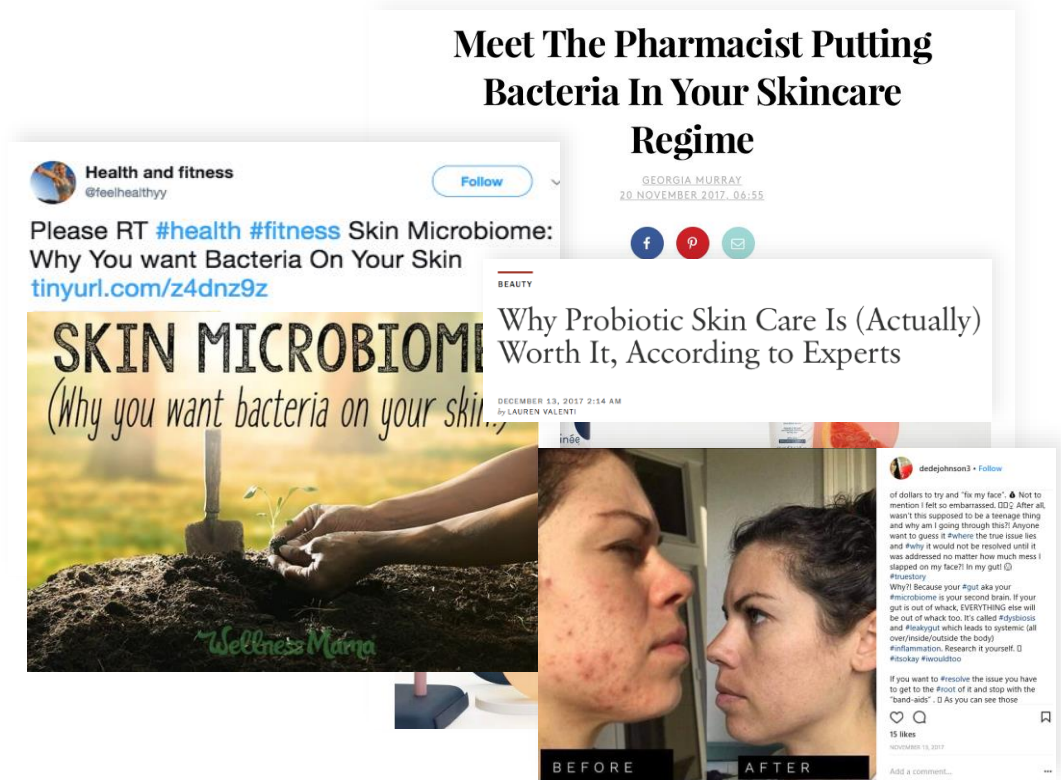


Understanding the human Microbiome

The MICROBIOME has also become a relevant topic for Skin, primarily in the context of Acne, and it is now evolving towards broader relevance for Beauty

Bacteria ‘as bad’, for example as a cause for Acne, is still recognized as the dominant idea but bloggers, brands and dermatologists are trying to change this.

Discussions around microbiome and ‘good bacteria’ trends up and constantly highlight the surprising and ‘unlikely’ nature of the skin care solution.

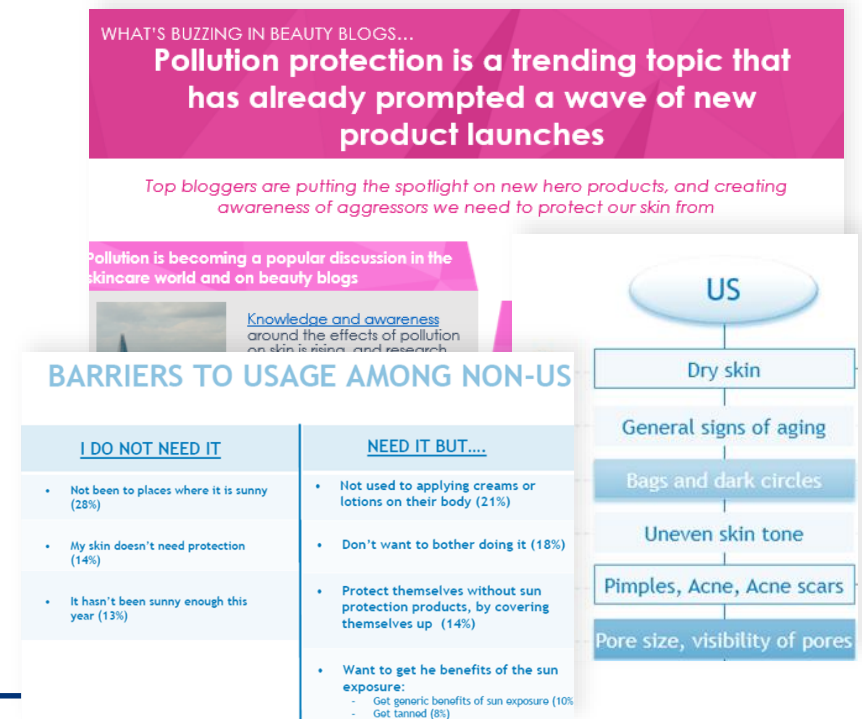


DSM leverages strong internal Consumer Insights Capabilities, with a proven track record of business building research

BOTH SECONDARY AND PRIMARY RESEARCH

- Social Listening (online conversation)
- Bloggers' Platform: The Beauty Connection
- Qualitative research
- Quantitative surveys
- Consumer Reports and Global Product Database
- Consumer Trends via specialized Agencies

We decided to conduct proprietary research on the **Skin Microbiome** to understand how the topic is evolving



DSM's comprehensive research on Skin Microbiome to understand key stakeholders



Our Bloggers



Name: Liz

Country: Luxemburg

Website: Smellslikeagreenspirit.com

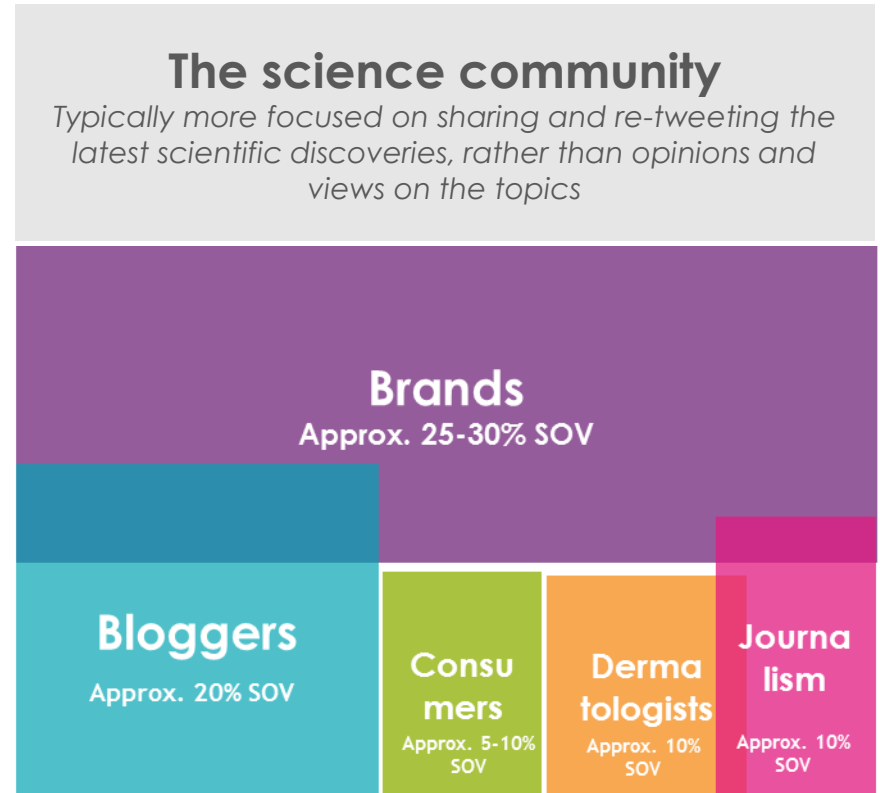
Passionate about well-being and holistic approaches, hunting down green beauty and wellness products and seeking a healthier and happier life. Relishing in uncovering green gems from all over the globe and decoding the ingredients

The Skin Microbiome is an emerging topic on which the scientific community and brands are leading conversations

The 'regular consumers' haven't yet engaged with the topic fully, but brands, dermatologists and skincare bloggers are.

The last 3 months have started to see some more comments among consumers trialing new skincare ranges and sharing articles on the topic more proactively.

KEY GROUPS TALKING ABOUT SKIN MICROBIOME



Based on a qualitative analysis of a sample of 400 posts from October - December 2017.

Making sense of it all – four key approaches

REMOVING BACTERIA	PREBIOTICS	PROBIOTICS	POST-BIOTICS
<p>TRADITIONAL / NOT NEW</p> <p>Typically found in most mainstream cleansers and spot treatments</p> <p>Often in products aimed at teenagers or those with acne prone skin</p> <p>Natural antibacterial ingredients include honey and tea tree oil</p>	<p>FEEDING “GOOD BACTERIA”</p> <p>Typically used in product formats such as cleansers (non 'leave in')</p> <p>Fits into the gentle, natural care narrative of brands</p> <p>Seen as less new and differentiated by beauty bloggers (vs probiotics) – need to be unique to stand out</p>	<p>ADDING “GOOD BACTERIA”</p> <p>Heroed by microbiome-focused brands</p> <p>Seen as a new and different story by bloggers</p> <p>Live bacteria cues effectiveness and results</p> <p>A simple story to tell consumers – easy to understand</p>	<p>ADDING BY-PRODUCTS OF BACTERIA</p> <p>Typically included as part of a mix (e.g. pre, pro and post)</p> <p>Many already known and celebrated in their own right (e.g. lactic or hyaluronic acid) – can be positioned as powerful ingredients</p> <p>the idea of post-biotics a complex story to tell consumers</p>

- Most solutions today are Pre-biotics
- Brands and Ingredient Manufacturers can offer a combination of these effects

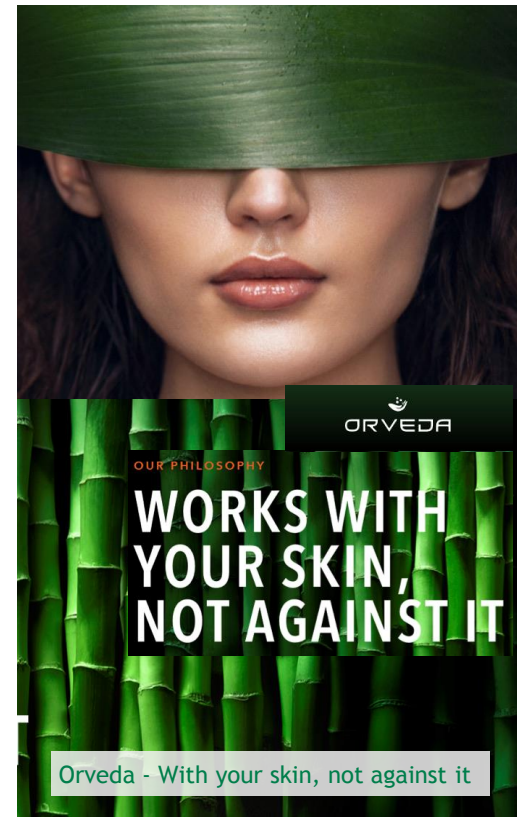
The Skin Microbiome fits with broader, modern views on skin and beauty

“WITH YOUR SKIN NOT AGAINST IT”

Instead of trying to cosmetically alter your skin for the better, brands are working with your skin to improve its health and therefore appearance

Brands are:

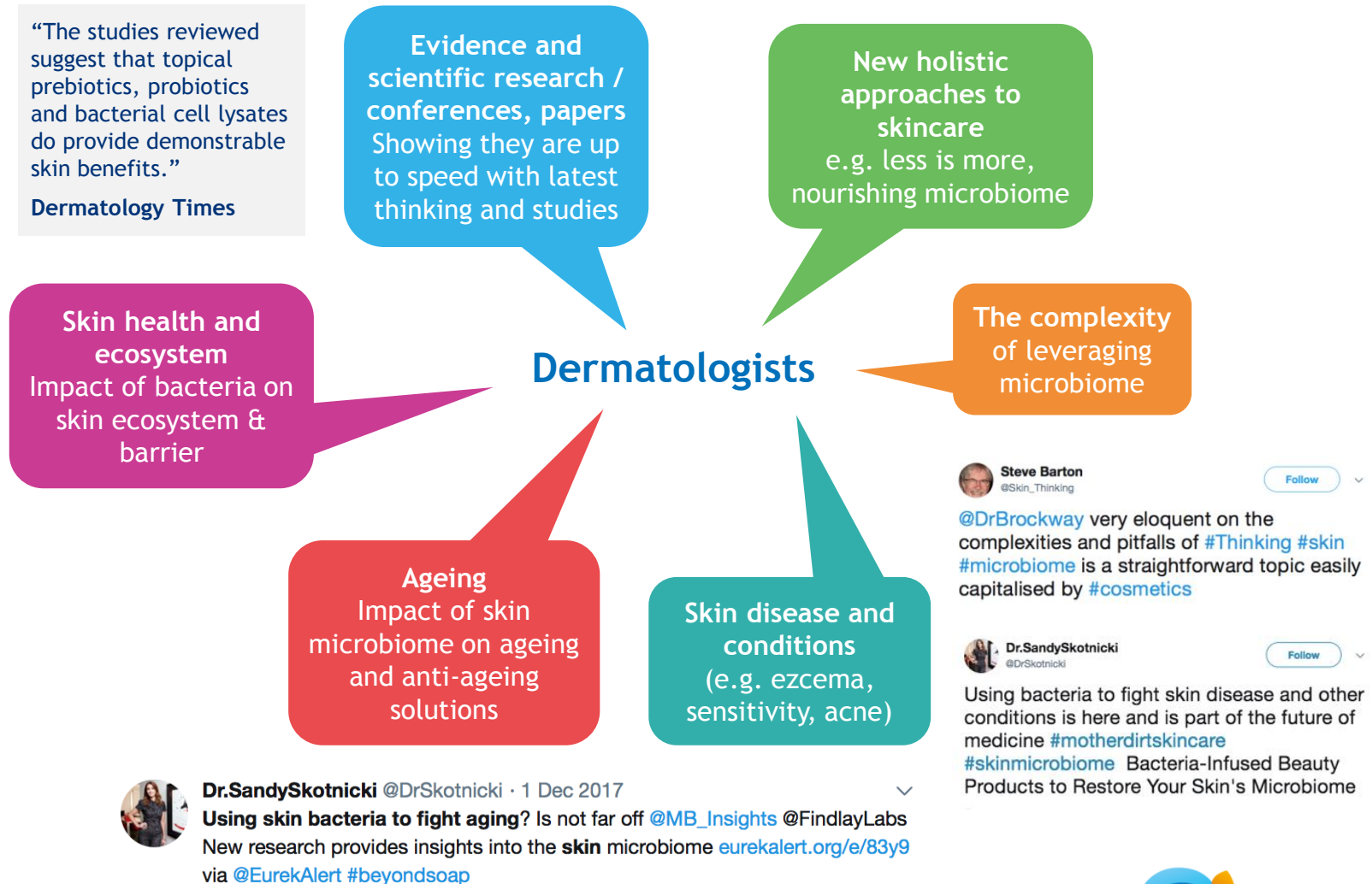
- Positioning and talking about skin as a living thing and an ecosystem that needs to be worked with
- Celebrating consumers' natural skin Brands are not looking to fundamentally change the appearance of skin using harsh chemicals, instead promising to help consumers make the best of what they already have
- Some brands are aggressive towards skincare brands of the past, blaming them for issues consumers have with their skin and products having worked 'against' the skin in the past



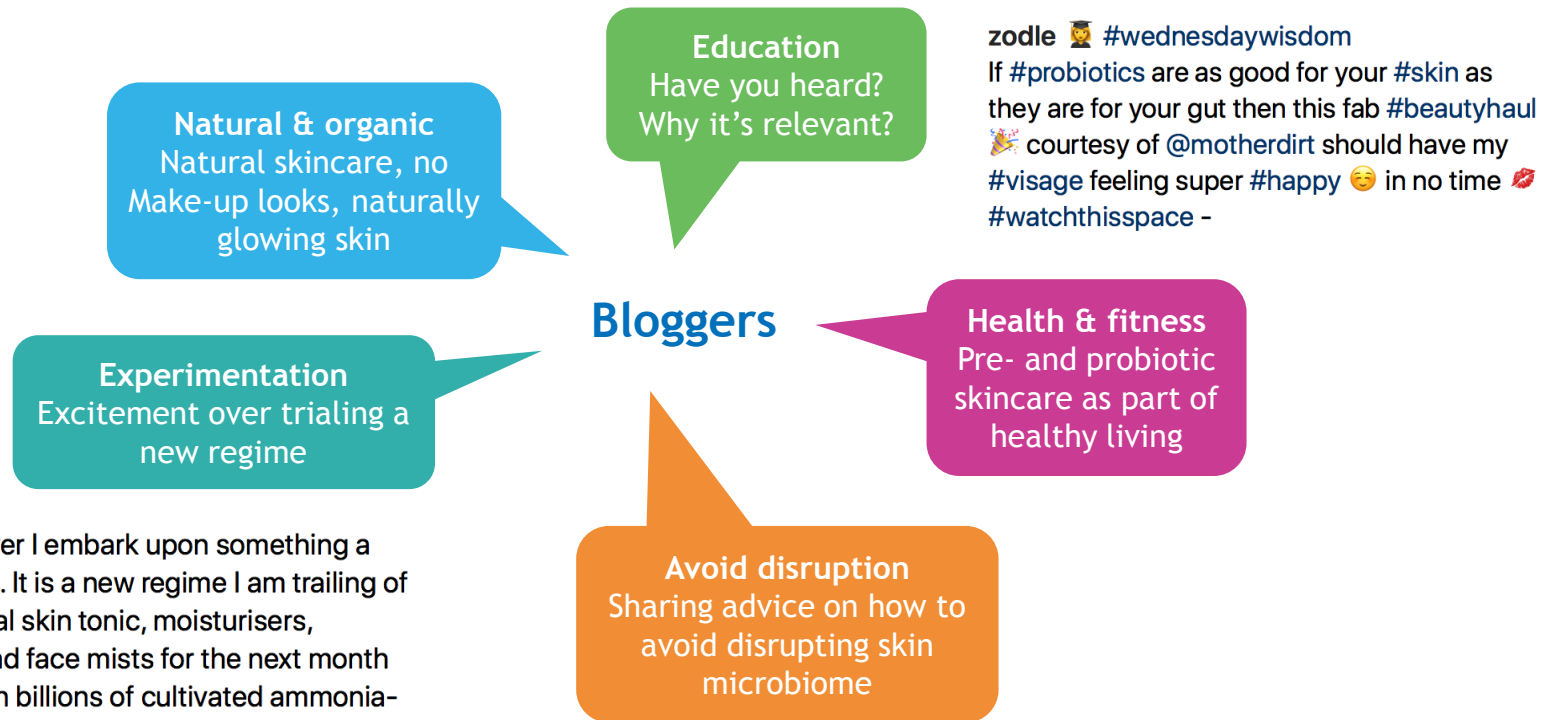
"I love how it's not adding or taking away anything - it's just working with your skin to keep it at its best"

Priscilla, Blogger

What Dermatologists say



What Bloggers say



Today however I embark upon something a little different. It is a new regime I am trialing of living bacterial skin tonic, moisturisers, shampoos and face mists for the next month which contain billions of cultivated ammonia-oxidizing bacteria (AOB) most commonly found in dirt!

Most cleansers contain surfactants that dry your skin and antimicrobials that disrupt microfloral balance because they're indiscriminate in their action — they kill off the good bacteria right along with the bad bacteria. This is a huge problem because it's the good bacteria that are keeping the pathogens in check. When you wipe them out, you have no defense against the pathogens taking over. It's all about the balance.

What Bloggers say

Bloggers associate the **Skin Microbiome** trend with specific broader **Beauty Trends**

HEALTHY IS THE NEW SEXY

This trend ties into the growing global consciousness of wellness; of health being your greatest wealth and status, with brands focusing on skin *health* rather than just skin *appearance*.

**#health #wellbeing
#fitness #wellness**

“Beauty from within is a huge trend, and probiotics are a big part of that already. There is a more holistic approach to wellbeing now.”

Liz, green beauty blogger

**HEALTHY IS
THE NEW SEXY**

What Bloggers say

Bloggers associate the Skin Microbiome trend with specific broader Beauty Trends

#selfconfidence
#loveyourself
#positivity

SELF ACCEPTANCE AND ACTUALISATION

Being connected with yourself, making progress and focusing on self-actualisation, not changing yourself.

"I love that it's not about transforming your skin, but making the most of what you have now."

Priscilla, beauty & lifestyle blogger



What Consumers say



dedejohnson3 • Follow

Why?! Because your [#gut](#) aka your [#microbiome](#) is your second brain. If your gut is out of whack, EVERYTHING else will be out of whack too. It's called [#dysbiosis](#) and [#leakygut](#) which leads to systemic (all over/inside/outside the body) [#inflammation](#). Research it yourself. 🤔 [#itsokay](#) [#iwouldtoo](#)

Nutrition
Gut microbiome
impact on skin

Product finds & loves
Excitement over trialing
a new regime



Amber Cunningham 🌱 (
[@amberlouiseunningham](#))

Absolutely in love with my goodies from
[@we.are.cultured](#) [#getcultured](#)
[#culturedsquad](#) [#love](#) [#health](#) [#probiotics](#)
[#vegan](#) [#vegetarian](#) [#skin](#) [#balance](#)
[#beautyblog](#) [#justablogaboutbeauty](#)
[#bblogger](#) [#vegan](#) [#vegetarian](#) [#health](#)
[#skin](#) [#culturedsquad](#) [#balance](#) [#love](#)
[#bblogger](#) [#getcultured](#) [#probiotics](#)
[#justablogaboutbeauty](#) [#beautyblog](#)

Consumers

Skin issues / problem-solving
Questions, especially acne
related

- Q** “Has anyone noticed a correlation between kombucha and acne?”
- A** “Well there are some research showing a correlation between gut health and skin health. So probably the probiotics in kombucha are healing your gut, thus improving the condition of your skin.”

How it is being played out today



Specific & targeted

ESTABLISHED BRANDS: SPECIFIC/TARGETED BENEFITS

Products designed to focus on a particular skin concern

- Specific Skin Benefits, e.g. anti-wrinkles
- Educating consumers in an evolutionary manner
- Want to appear as innovators



Nature

START -UP / INDIE BRANDS:

Overall skin health

- Natural, empirical solutions
- Aim to revolutionize skin care discourses

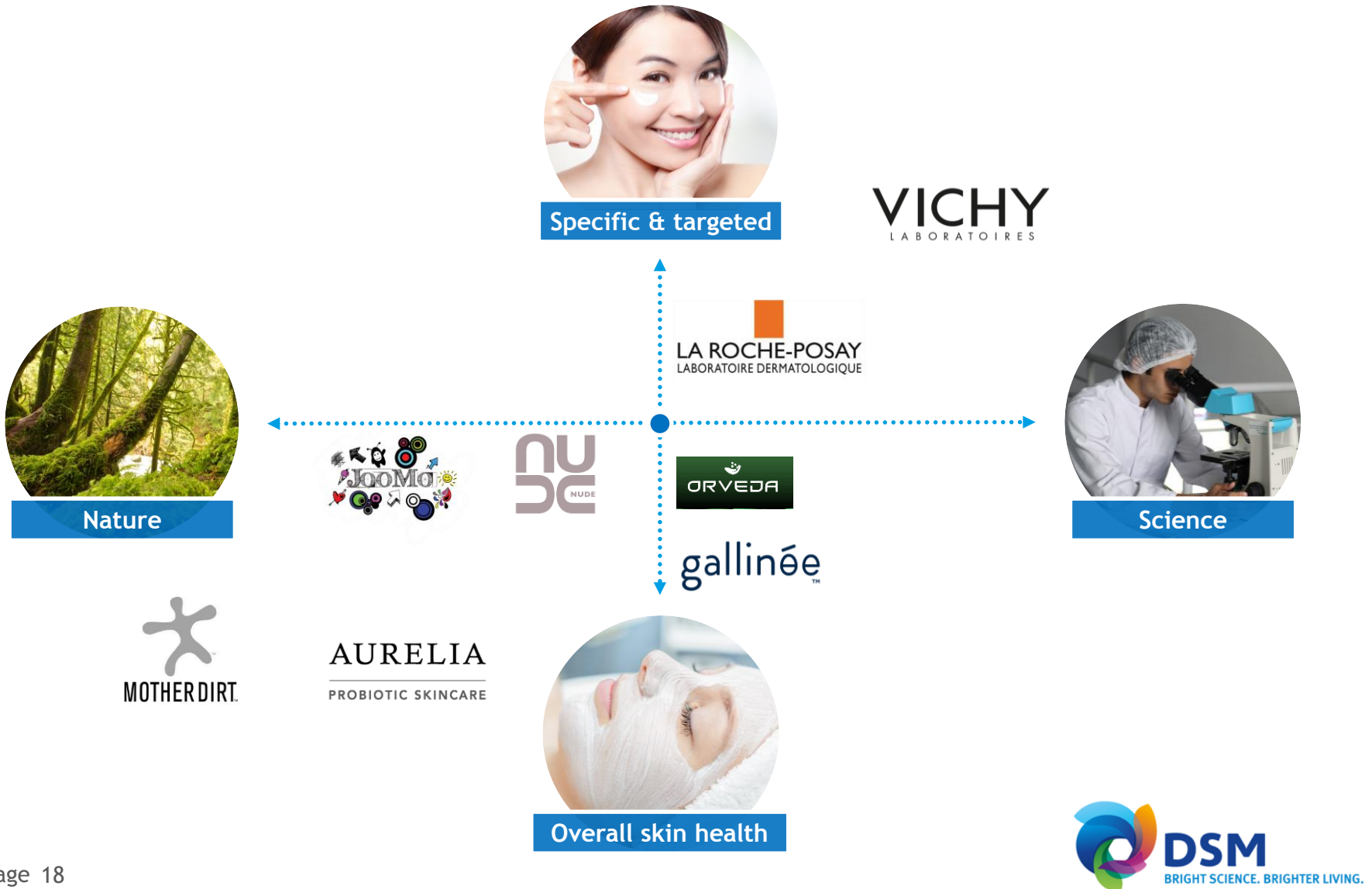


Overall skin health



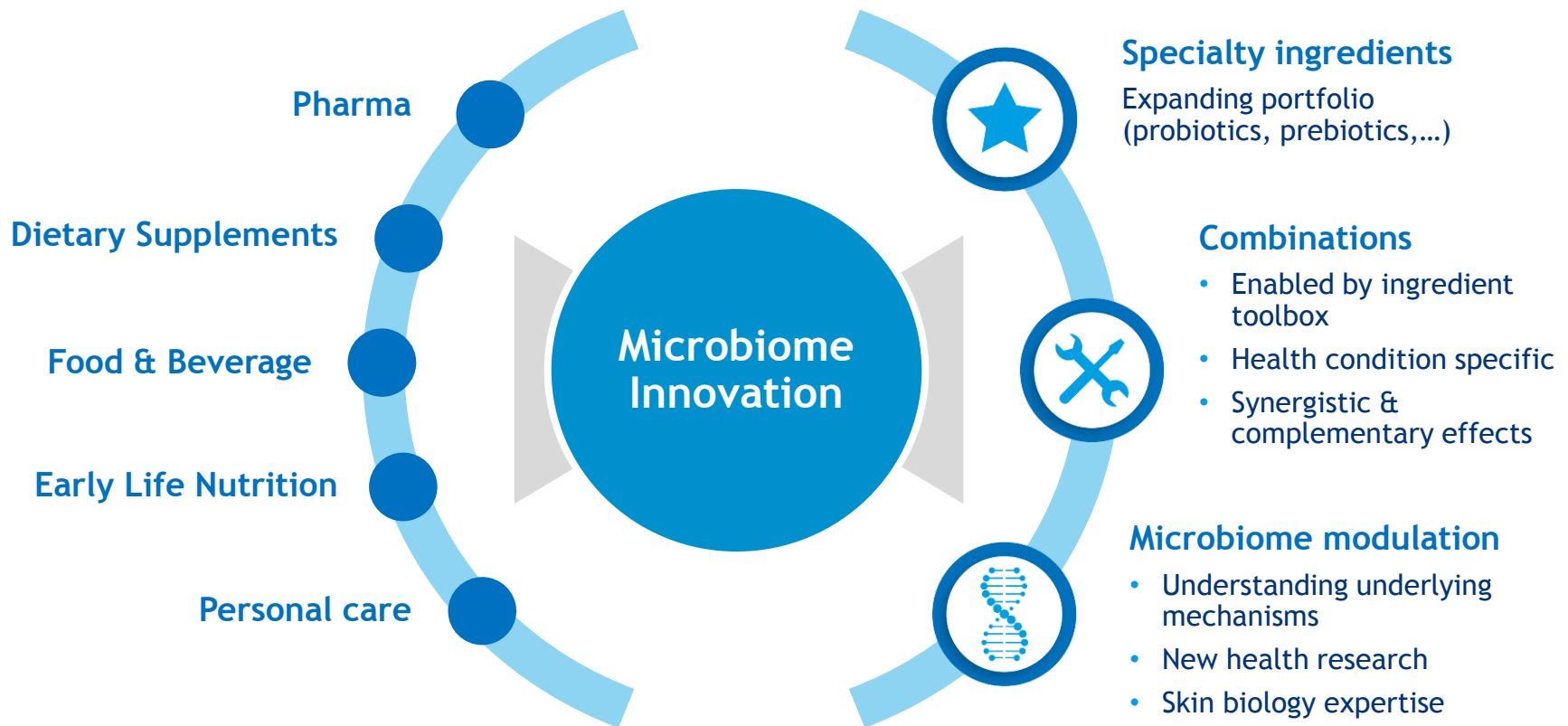
Science

How it is being played out today



THE BROADER DSM EXPERIENCE IN MICROBIOME

DSM Nutrition has developed solution platforms across multiple product industries that focus on the Microbiome



Combining expertise in Skin Care with the Skin Microbiome to create new solutions

OUR RATIONALE:

- Microbiome research is deeply embedded in DSMs innovation culture
- DSM is an established leader for epidermal bioactives with a fundamental understanding of skin science
- We now combine our expertise and knowledge to create new innovative solutions

OUR OBJECTIVES:

- Short term: Create innovate bioactive-driven solutions in the field of skin microbiome that solve consumers' everyday skin needs
- Long term: Create novel approaches and innovative products related to the skin microbiome, e.g. probiotic ingredients



DSM Personal care is a recognized leader in Skin Care



- Unique track record in bringing new molecules and solutions to the market
- More than 25 publications and posters and several awards in 2017

- Strong peptide platform with rational design
- Natural platform including Biotechnology & Fermentation
- Leader in epidermal science with CORNEOCARE™
- Product substantiation using outstanding visualization tools

- Innovative new claims and concepts based on market insights (in-vitro, ex-vivo, and in-vivo studies).
- Identify new targets for the next generation of actives
- Customer centric innovation & collaborations



Bacteria like certain conditions

The epidermis provides the medium for microbes, its healthy condition is essential for the right balance of microbes

At the same time the epidermis is also the barrier that protects the body against infiltration from microbes

A healthy well balanced microbiome starts with a healthy skin and scalp barrier

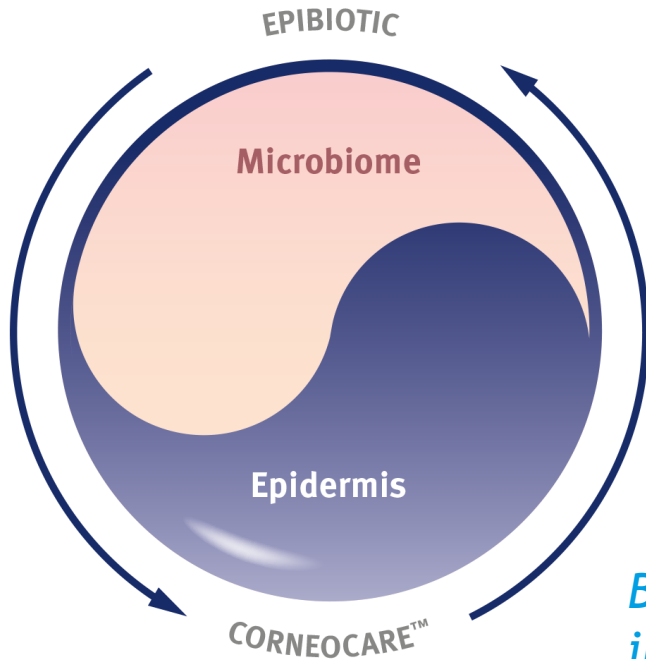


DSM's Microbiome Beauty approach

The DSM microbiome beauty approach builds on two well established actives:

SYN-UP™ for a highly resistant healthy skin barrier

PENTAVITIN® for a strong scalp barrier



CORNEOCARE™ - a holistic approach to create ultimate skin appearance and sensation via building a strong epidermal barrier

EPIBIOTIC - new ways to preserve, reinforce, and restore a healthy skin - microbiome interaction

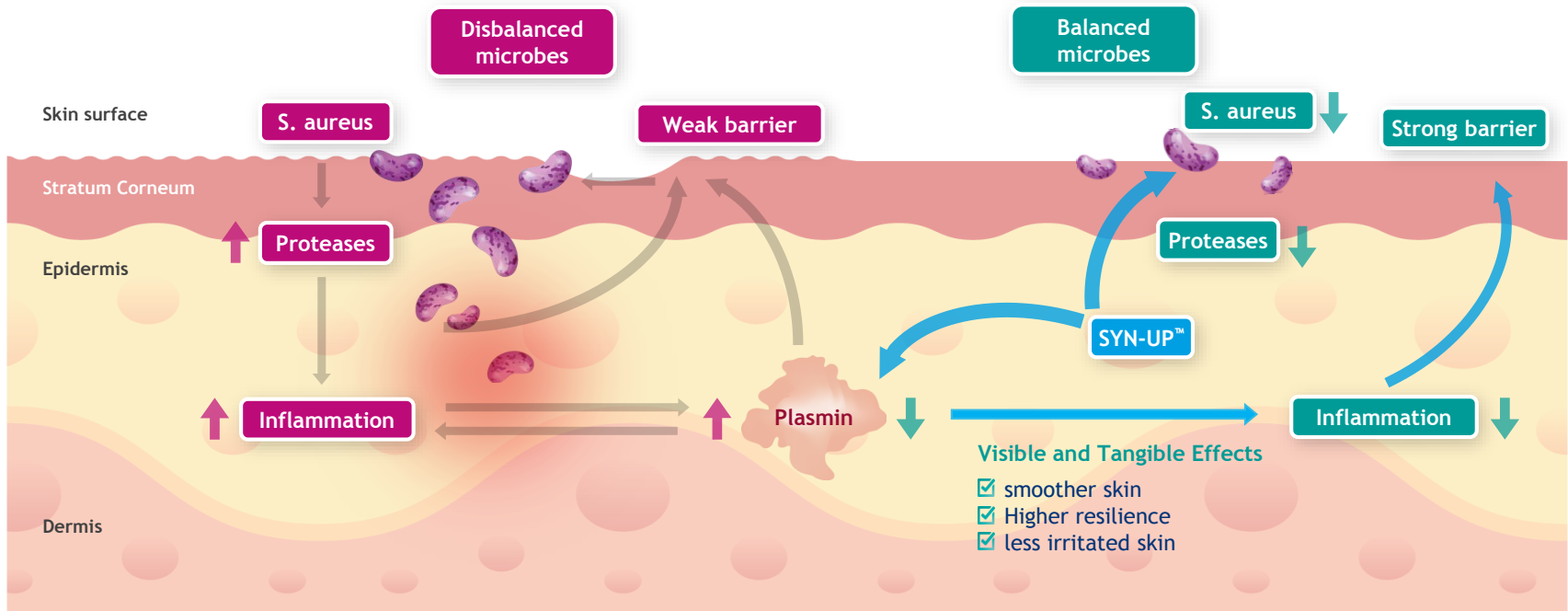
Both concept together integrate in-depth epidermal science for relevant consumer benefits

SYN-UP™

Boost the skin's
resilience
for great
looking skin



SYN-UP™ for a well balanced skin - microbiome interaction

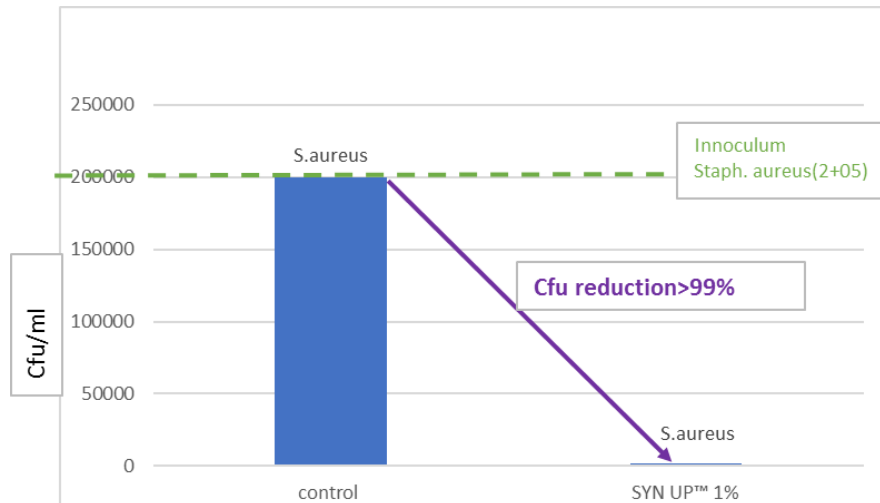


- Disbalanced microbiome: *S. aureus* affects skin barrier function via bacterial proteases, inflammation is triggered and plasmin is activated leading to a weak barrier and finally to a vicious circle.
- SYN-UP™ breaks this vicious circle by inhibiting plasmin activity, and by direct activity on *S. aureus*.

SYN-UP™ *in vitro* substantiation

SYN-UP™ is a unique Plasmin and Urokinase inhibitor. SYN-UP™ contains 1000 ppm of a low molecular weight (612 g/mol) dipeptide derivative dissolved in glycerin/water

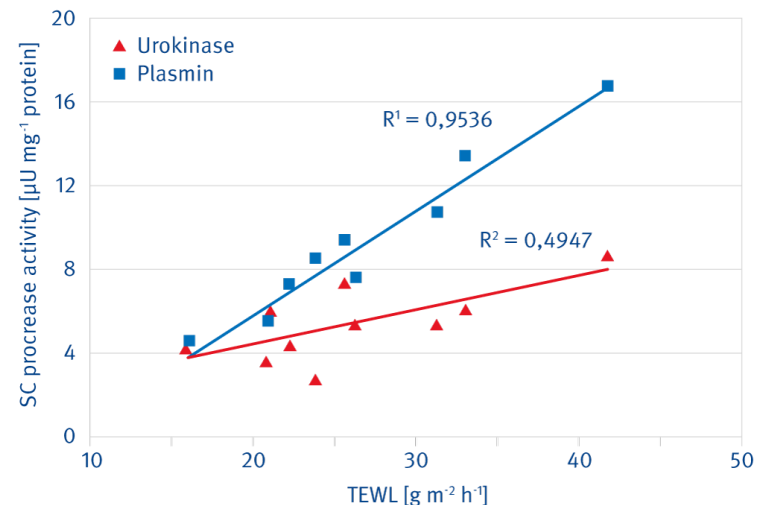
SYN-UP™ inhibits *in vitro* *S. aureus*



Micro-challenge test method NF EN ISO11930 in 2ml microplates after 24h incubation at 37°C

* CfU: Colony forming Unit

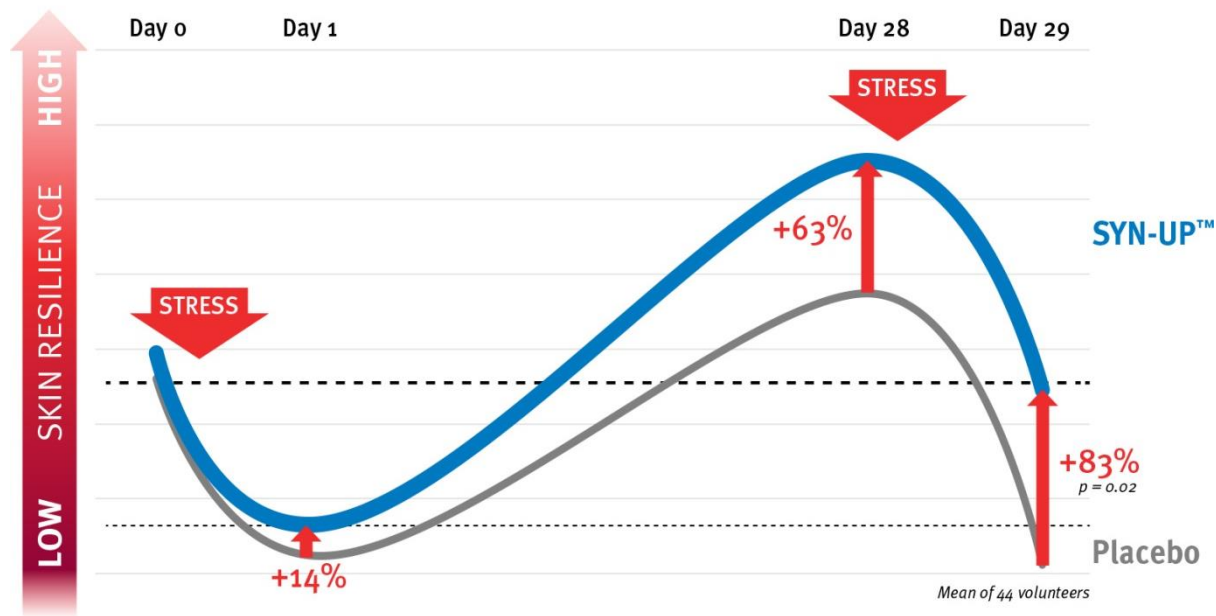
Plasmin activity and TEWL



*R Voegeli et al. IJCS 2008
[Publication Award by SCS]*

SYN-UP™ improves skin barrier resilience *in vivo*

Skin resilience was evaluated by measuring the TEWL after stresses to the cheek stratum corneum from six consecutive tape strippings on day 0 and day 28. The higher the skin's resilience, the lower the TEWL



SYN-UP™ makes the skin more resilient day by day against stress attacks

After the 2nd stress, skin resilience almost matched the baseline value (significant), indicating stresses to the barrier preventable

SYN-UP™ - Skin Care application

**For experimental use
only. Not for sale.**

Formulation lot no.:

SK-E-101305-1

Production date: **04/2018**

Exp. date: **04/2020**

DSM Microbiome ingredient:

SYN-UP™ (1%)

*See documentation
for INCI information*



MAKE THE
MOST OF YOUR
SKIN WITH

**MICROBIOME
BEAUTY CREAM**

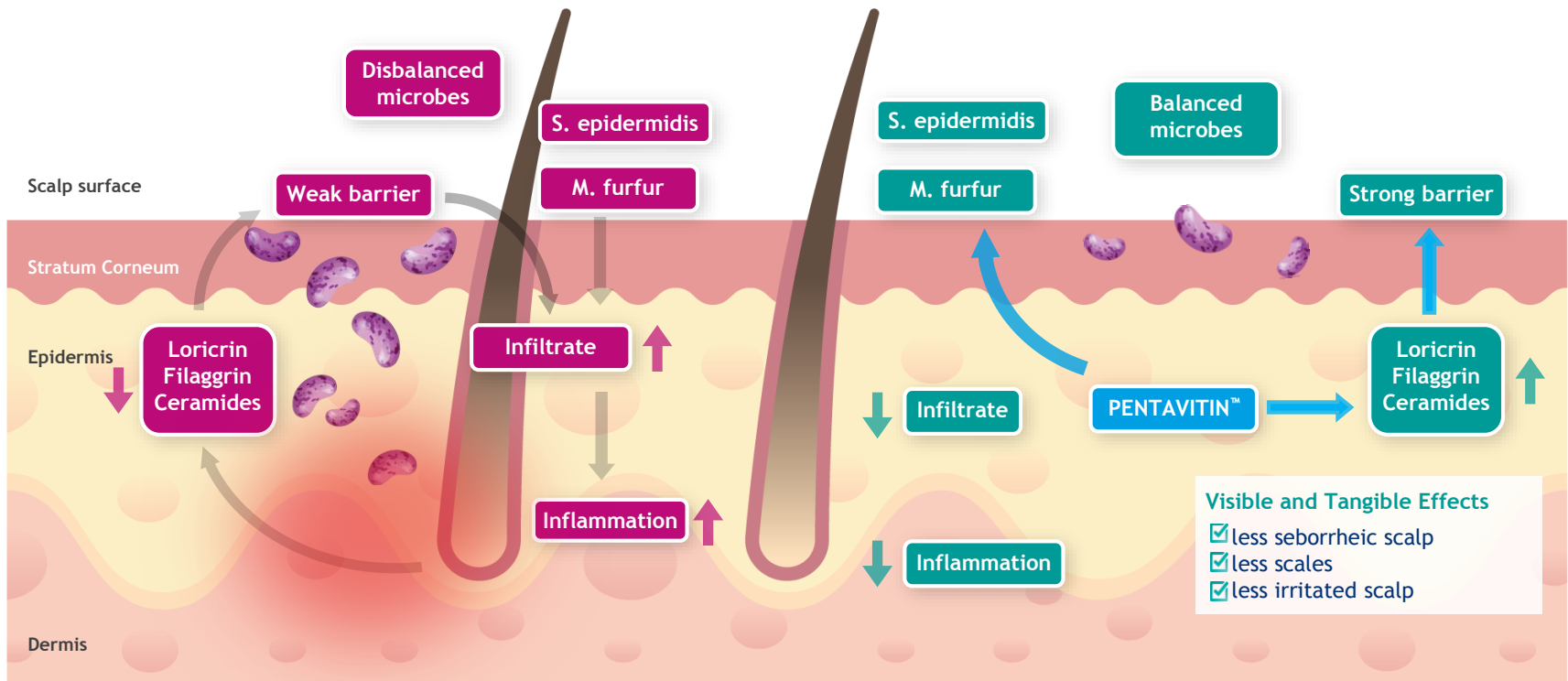
Featuring:
SYN-UP™

 **DSM**

**PENTAVITIN® for a
perfect scalp and
body barrier**



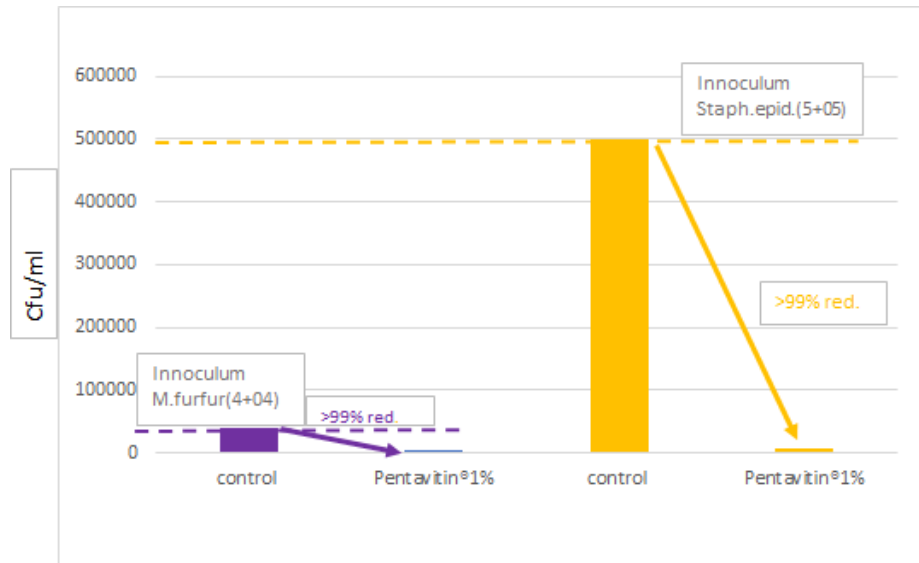
PENTAVITIN® for a well balanced scalp - microbiome interaction



- Disbalanced microbiome: Microbial infiltration leads to inflammation, and decrease of barrier building blocks and finally to increased level of flaking.
- PENTAVITIN® breaks this vicious circle by rebalancing microbial activity, and stimulating the formation of epidermal building blocks.

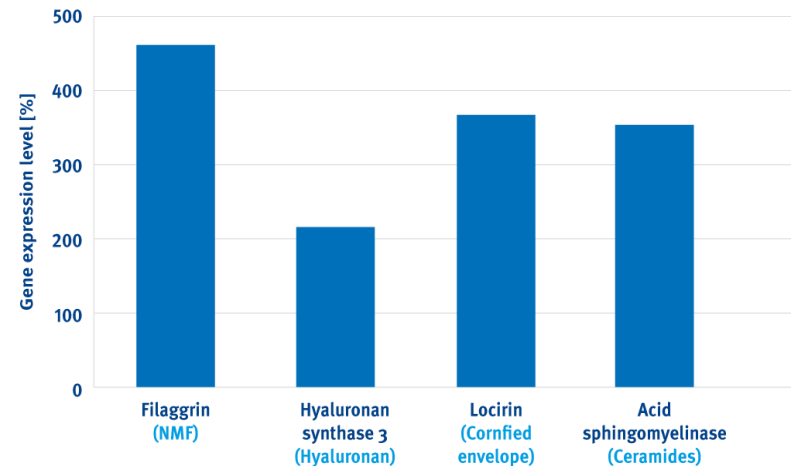
PENTAVITIN® *in vitro* substantiation

PENTAVITIN® impact on scalp microbiome



PENTAVITIN® is able to control microbial species equilibrium such as *Malassezia furfur* and *S. epidermidis*

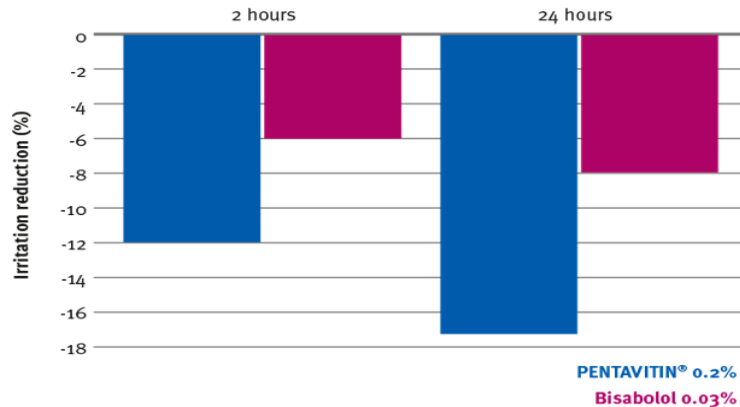
PENTAVITIN® impact on skin barrier



0.3% PENTAVITIN® upregulates the filaggrin, loricrin, hyaluronan synthase-3 and acid sphingomyelinase gene expression

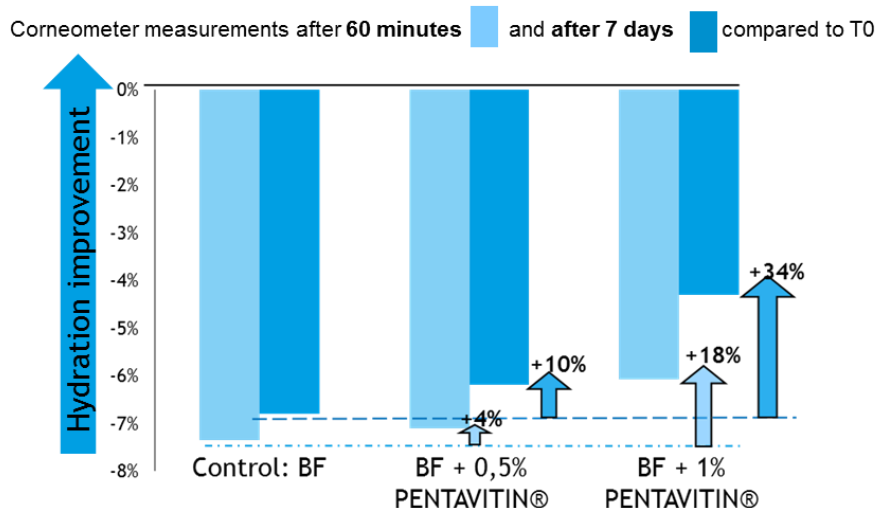
PENTAVITIN® rinse-off *in vivo* efficacy

Study 1: First Rinse-off Soothing for Deep Hydration



- 0.2% PENTAVITIN® reduces irritation by 12% and 17% after 2h and 24 h
- PENTAVITIN is outperforming current market benchmark Bisabolol

Study 2: Intense hydration in a shower gel in vivo



- Short term: after 60 min single application up to 18% more hydration
- Mid-term: after 7 days twice daily application up to 34% more hydration

PENTAVITIN® - shampoo application

**For experimental use
only. Not for sale.**

Formulation lot no.:
HC-E-100347-20

Production date: **03/2018**

Exp. date: **03/2020**

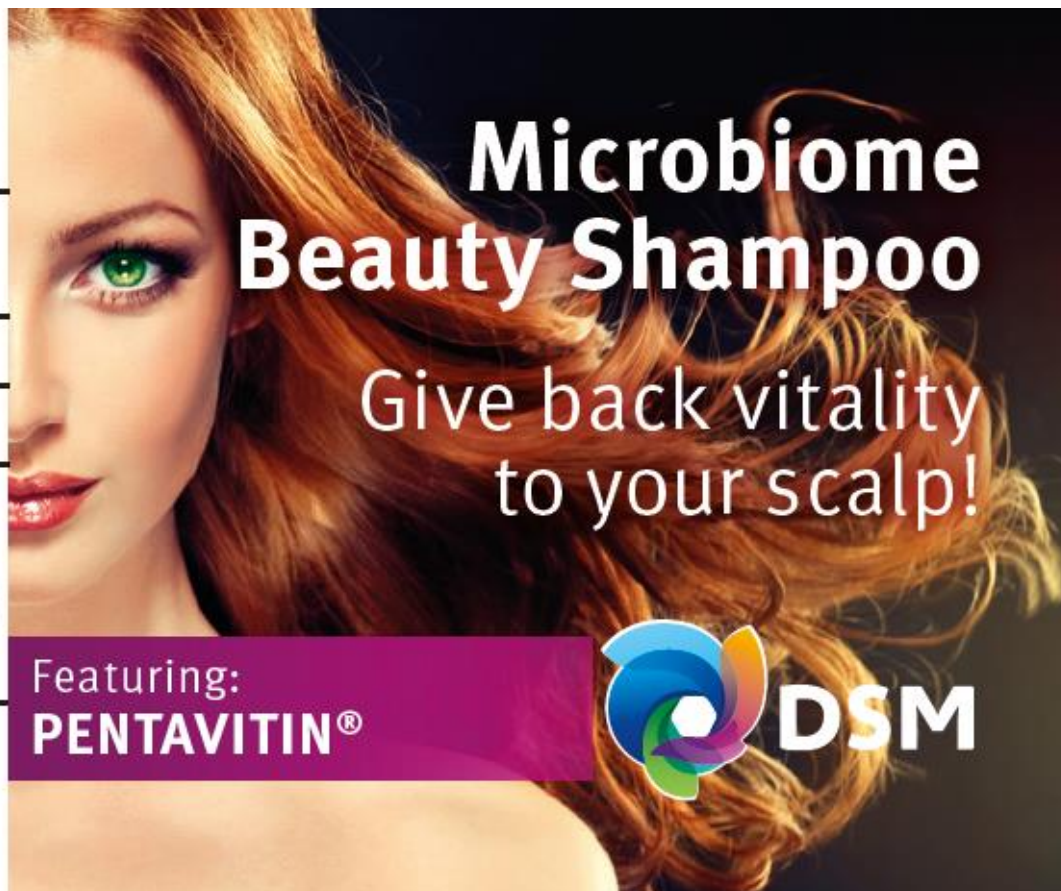
DSM Ingredients:

PENTAVITIN® (0.5%)

TILAMAR® Quat 2240 (1.5%)

PARSOL® Guard (0.1%)


*See documentation
for INCI information*



**Microbiome
Beauty Shampoo**

Give back vitality
to your scalp!

Featuring:
PENTAVITIN®



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The background of the image is an abstract composition of flowing, wavy lines in various shades of blue and green. The colors range from deep navy blue to light sky blue, with some areas of teal and seafoam green. The lines create a sense of movement and depth, resembling ocean waves or a stylized landscape. The text is centered horizontally and vertically within the image.

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