

zoom

The Magazine Dedicated to Global Cosmetics Evaluation

IN VIVO STUDIES

Hydration
Menopause
Skin Brain Axis

BEAUTY TESTING TRENDS

Market barometers
Asia - India
Keynotes

IN VITRO ASSAYS

Acne-prone skin
Biofilm
Natural moisturizing
factor

Microbiome Claims

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Editorial



Ten years ago, the skin microbiome was a fresh promise.

Today, it has become a marketing argument for ingredient suppliers and finished product brands across the beauty industry. In 2026, this claim ranks third among the most requested research topics on the Skinobs testing platform. This is welcome news for scientific evaluation and for the personalization of skincare.

This issue of ZOOM explores the subject from in vitro assays through to clinical and biometrological studies on volunteers. Our thematic dossier examines how a

claim of respecting or balancing the microbiome can be evaluated, first through vitro and ex vivo assays, then through in vivo studies in humans. Each of these approaches serves a distinct purpose. A test on bacterial strains or cell cultures shows how a product behaves, whereas an in vivo study reveals what happens under real conditions of use.

Acne offers a particularly illuminating case. Cutibacterium acnes lies at the heart of these claims, yet this bacterium is a natural resident of healthy skin.

The real question, therefore, is not merely «how many bacteria?» but «which ones, and how do they interact with the skin?».

This is why testing methods are growing ever more sophisticated: the aim is no longer simply to describe the bacterial strains present, but also to understand their functions.

On the regulatory front, there are still no specific rules in Europe, Asia or the United States governing these claims, nor

the labels such as «microbiome-friendly» that are now emerging.

Choosing the most appropriate method, and then the most accurate words to describe its results, remains a brand's best safeguard.

In this issue, you will find articles on the latest trends in hydration and menopause testing, the Skinobs barometers, the ISBS keynotes, reports from the SFC

«Maquill'âges» meetings, Cosmetotest and the «Beauté sous tension» study day, as well as interviews and news from testing laboratories and instrumentation suppliers.

Finally, should you prefer listening to reading, all our webinars are available as replays on the Skinobs YouTube channel, ready to be viewed at any time. Enjoy the read.

Anne Charpentier
CEO and Founder, Skinobs



01

CASE STUDY MICROBIOME EVALUATION

The skin microbiome is a major frontier for cosmetic science, and evaluating it takes the right tools at every stage. This section looks at preclinical and clinical approaches, alongside contributions from our partners on the same theme.

Clinical Studies

Clinical Evaluation of the Skin Microbiome: from Analysis to Claim Substantiation



Microbiome-related claims have proliferated over the past decade, in response to consumer expectations, in step with advances in skin sampling methods, and in line with the latest innovations in multi-omics analysis. The following outlines what constitutes a credible, **scientifically robust clinical evaluation** capable of meeting these challenges.

Why the Clinical Dimension Matters

The skin hosts an estimated one trillion microorganisms and more than 1,000 bacterial species, together with fungi, viruses and mites. Their distribution is not uniform. Sebaceous areas such as the forehead favor lipophilic bacteria such as *Cutibacterium acnes*. Moist areas such as the axillae are dominated by *Corynebacterium* and *Staphylococcus epidermidis*. Dry areas such as the forearms harbor a broader diversity of taxa. Each individual also carries a distinctive microbial signature, shaped by

genetics, hormonal status, age, lifestyle and environment.

This bacterial community is far more than a transient presence on the skin. It forms a **biofilm at the epidermal surface**, contributes to **barrier function**, **helps regulate inflammation and protects against opportunistic pathogens**. When this balance is disrupted, dysbiosis is associated with conditions such as acne, atopic dermatitis and dandruff.

Acne offers a telling example, as it cannot be reduced to an excess of *C. acnes*. This bacterium is in fact a normal resident of healthy sebaceous skin. Current research highlights differences between strains and phylotypes, as well as their interactions with sebum, host immunity and other species such as *S. epidermidis*.

For the evaluation of dermocosmetic actives and finished products, this translates into **three major benefit categories**:

- rebalancing effects (prebiotic, probiotic, postbiotic);
- probiotic-like effects;
- antimicrobial effects.

Consumers have followed suit. Between 2018 and 2023, launches bearing a microbiota-related claim grew by 68% per year, according to Innova Market Insights. The pressure to substantiate these claims has grown just as rapidly.

Microbiota or Microbiome: What are we Measuring?

The skin microbiota refers to the collection of resident microorganisms. The microbiome is a broader concept: a functional ecosystem encompassing genomic data, structural biomolecules and metabolic activity. A study that enumerates bacteria supports a claim about the microbiota. A study that demonstrates what those bacteria do supports a claim about the microbiome. **The wording of a claim should therefore reflect the level of evidence on which it rests.**

Three approaches, **three questions** **cosmetic activity** on the microbiota can

Between 2018 and 2023, launches bearing a microbiota-related claim grew by 68% per year.

Read more than
100 articles on
microbiome on
Cosmetics Testing
News



Designing a Robust *in vivo/ex vivo* Study

Inter- and intra-individual variability represents the central challenge. Age, sex, anatomical site, diet, hygiene practices and season all influence the baseline. Only a rigorous methodology can address this. It requires:

- careful subject selection;
- a clearly defined sampling site;
- a controlled comparison between treated and placebo (or untreated) areas;
- sampling before and after application over several weeks.

Bioinformatics and statistical modeling then make it possible to distinguish a treatment effect from natural fluctuation. Without them, neither causality nor the long-term impact of

a product on microbial homeostasis can be demonstrated.

Sampling itself must be standardized to ensure data integrity. In cosmetic studies, swabbing and tape stripping are the standard methods.

- **Swabbing** is simple, non-invasive, rapid and inexpensive. It is compatible with 16S, ITS and shotgun analyses. However, it reaches only the surface, sometimes yields limited DNA and carries a risk of contamination.

- **Tape stripping** samples slightly deeper. It is standardized and inexpensive, but minimally invasive, and yields more fragmented DNA.

- **Biopsies** provide access to deeper layers and to host tissue. They are, however, invasive and painful, raise ethical constraints, limit volunteer recruitment and are more costly. They

are rarely appropriate for cosmetic studies.

- **At-home self-sampling kits**, which are becoming increasingly widespread (HelloBiome, Sequential, Byome Labs), make large-scale studies feasible. Inter-user variability, handling errors and uncontrolled storage conditions must nevertheless be taken into account. Protocols compare swab samples from the treated area and from the untreated or placebo area, before and after treatment.

Ethics warrants particular attention. Informed consent, anonymization of genetic data and the safety of any microbial exposure are essential. Ethics committees frequently require detailed protocols, especially for vulnerable populations such as infants or individuals with pre-existing skin conditions.

be assessed *in vitro*, *ex vivo* and *in vivo*.

Each approach addresses a distinct question.

In vitro assays, performed on single strains or defined consortia, provide a controlled and reproducible snapshot of how a product interacts with isolated bacteria. Rapid and cost-effective, they are ideally suited to raw material screening. However, only a small fraction of skin microbes can be cultured using standard techniques, and monocultures disregard interspecies interactions.

Co-culture systems help bridge this gap. A medium developed in 2024 by Tokyo University of Science supports the concurrent growth of four key skin bacteria: *S. epidermidis*, *S. capitis*, *C. acnes* and *Corynebacterium*. Three-dimensional reconstructed skin models

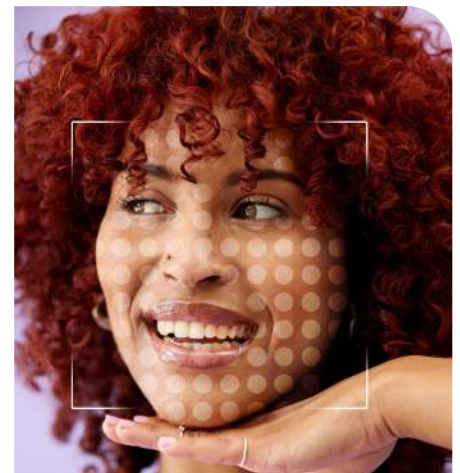
also make it possible to observe tissue responses to bacterial colonization without the variability inherent to human volunteers.

Ex vivo studies, conducted on human skin explants or on swabs collected from volunteers, offer a more realistic surface. They are particularly valuable where ethical constraints limit *in vivo* testing. None of these approaches, however, observes bacteria within their natural context. This is the role of **in vivo studies**, which evaluate the microbiota together with the host, over time and under real conditions of use. The trade-off is well established: a broader perspective, at the cost of greater inter-individual variability, longer timelines and higher costs.

From Enumeration to Sequencing

Sample processing begins with simple quantitative techniques such as colony-forming unit (CFU) enumeration. Molecular methods follow: first qPCR for known targets, then sequencing.

Amplicon sequencing is the most widely used approach to characterize community composition. It involves determining the sequence of a specific DNA fragment previously amplified by PCR. This amplified fragment is referred to as an «amplicon».



In microbiome studies, the target is a gene present in all organisms of a given group but variable between species, such as the 16S rRNA gene for bacteria or the ITS region for fungi. This single gene is amplified from the sample, sequenced, and the resulting sequences are compared against reference databases. This identifies which microorganisms are present and in what proportions. It is a valuable screening tool, with little interference from host DNA. It nevertheless provides taxonomic information only (which organisms are present) and remains subject to primer bias, variable DNA extraction efficiency and lower taxonomic resolution.

While PCR allows rapid identification of known sequences, next-generation sequencing (NGS) offers a broader perspective: as a hypothesis-free

Microbiome on Skinobs Testing Platform

30 in-vivo solutions

99 CRO's in 33 countries

12 study parameters

Labels and Regulatory Uncertainty

To date, there is no specific global regulation governing skincare products or ingredients targeting the skin microbiome. Brands must comply with the rules applicable to all cosmetics with respect to safety, and claims. In 2021, the ICCR published a report entitled «Microbiome and Cosmetics» to define key terms. Interpretation and enforcement nevertheless still vary across regions. In the meantime, several laboratories have developed their own labels, such as «microbiome-friendly», «respect the microbiome», or «maintains the microbiome». Most rely on in vitro or ex vivo protocols. At least one certification is based exclusively on in vivo volunteer studies. These labels generally assess whether a product preserves microbial diversity and key species while remaining well tolerated. They are useful communication tools that reassure consumers. They are not, however, regulatory certifications, and brands should present them accordingly. Selecting the appropriate method has become as much a sourcing question as a scientific one. **On Skinobs**, brands and formulators can currently compare 15 clinical solutions offered by 81 providers, as well as 67 preclinical solutions from 58 providers. They can thus identify the protocol best suited to the claim they wish to make. The most useful question to ask any laboratory is a simple one: what exactly will this study allow me to claim?

approach, it enables the detection of novel genes with greater sensitivity. Shotgun metagenomics builds on this capability by sequencing all the genes of all the microorganisms in a sample. It makes it possible to assess microbial diversity and measure species abundance under different conditions, and provides functional information: which organisms are present and what they are capable of doing. It detects taxa down to approximately 0.01% relative abundance and makes it possible to address mechanistic questions relating to metabolism, virulence and resistance. In return, it requires more demanding bioinformatics, and skin samples contain a high proportion of host DNA.

The two techniques are frequently combined: 16S or ITS for screening, shotgun for in-depth analysis. The cost of 16S sequencing fell more than tenfold between 2015 and 2024, which now makes larger clinical datasets achievable. Sequencing is not the only option; imaging provides a useful complement. As porphyrins produced by *C. acnes* are fluorescent, they can be visualized at the skin surface, for example through digital image analysis. Confocal microscopy, in turn, enables non-invasive, real-time observation. These techniques do not deliver a complete taxonomic profile, but they offer a valuable visual readout.

Beyond Diversity: Multi-omics and Data Integration

An «omics» approach aims to analyze, comprehensively, an entire class of molecules within a sample: all genes (genomics), all RNA transcripts (transcriptomics), all proteins (proteomics) and all metabolites



(metabolomics).

The integration of these different layers, known as multi-omics, links composition to function. High-resolution mass spectrometry is the core technique of proteomics, metabolomics and lipidomics, just as sequencing is the core technique of genomics and transcriptomics. The multi-omics approach makes it possible to understand how a product acts on both the host and its microbiome. This is where bioinformatics becomes decisive. Analytical pipelines quantify relative abundance, diversity indices and functional gene expression. They draw on metadata to test associations with sequencing results.

The distinction between an observation and a proof is illuminating. «The product alters the quantity of bacteria» is an observation. «The product increases the relative abundance of *S. epidermidis*, and metagenomic data show a concomitant increase in the expression of anti-inflammatory genes» begins to constitute a mechanistic argument. This is the type of evidence that supports claims such as «maintains microbial balance». Several providers now offer integrated platforms combining metagenomics, metaproteomics and metabolomics for this purpose.

Methods	Data type	Taxonomy: Who is here?	Targets Analyzed	Resolution	Best for
qPCR (quantitative)	Absolute quantification	Specific targets only	1 to 3 specific targets (eg., <i>C. acnes</i>)	Species level	Validating a specific action (e.g., "Anti-bacterial" claims).
dPCR (digital)	Absolute quantification (ultra-precise)	Specific targets only	1 to 2 rare or difficult target	Species / Strain level	Measuring trace pathogens or complex samples (eg., scalp)
PCR Array	Semi-quantitative	Predefined panel	10 to 90 predefined target	Species level	Rapid profiling of a targeted ecosystem (Bacteria + Fungi)
NGS 16S / ITS	Relative (%)	Broad Universal	All Bacteria (16S) or Fungi (ITS)	Genus / Species level	Studying overall diversity and flora balance
Shotgun Metagenomics	Relative (%) (Absolute with Spike-in)	Total	ALL (Bacteria, Fungi, Viruses, Genes)	Strain level + Functions	Understanding the "Why" and "How" (Metabolism/Functional).

Outlook

Since 2012, the microbiome has generated considerable enthusiasm among smaller brands and within dermocosmetics, whereas major brands and the premium segment have remained cautious. This reticence reflects the relative immaturity of the discipline, particularly in skincare: sampling is complex, longitudinal follow-up is challenging, and the microbiome is shaped as much by lifestyle as by genetics. Many claims therefore put forward effects that remain uncertain. Given the high variability of the skin microbiota, there is no universal «ideal» composition to aim for. Evidence will stem from function, and from the integration of sequencing, high-resolution mass spectrometry and dedicated analytical pipelines.

In 2026, the beauty industry is undergoing a profound transformation in an increasingly connected, digital and personalized world, in which social media shapes beauty routines. To meet the expectations of these new consumers seeking products that act on the microbiome, cosmetic brands are developing **personalization based on targeted microbiota analyses**, which are essential for delivering microbiota-centered product recommendations. With the rise of digital technologies, the miniaturization of measurement devices, artificial intelligence and data analytics, this personalization of microbiota-targeted cosmetic care is becoming increasingly sophisticated, driven by advances in swab-based sampling and analytical techniques.

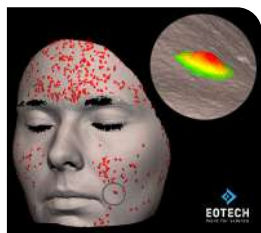
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Eotech

Acne Assessment through Combination of Visual Scoring and 3D Quantification

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Eotech's CBright photo studio, EvaFACE and EvaSKIN scanners provide complementary solutions for assessing acne and treatment efficacy.

CBright captures high-resolution, standardized facial photographs under controlled lighting and positioning conditions, enabling reliable visual scoring of acne severity

and longitudinal comparison. EvaFACE, designed for **full-face imaging**, and EvaSKIN, dedicated to **localized skin areas**, use **fringe-projection technology** to acquire accurate three-dimensional surface data. Their analysis software can automatically detect and count acne papules and pustules, while measuring their individual volume and changes over time. Together, these systems combine standardized clinical photography with objective **3D quantification** for comprehensive acne assessment in clinical and cosmetic studies.

SKINOBS



Smaltis

Exploring *Cutibacterium Acnes* to Support Cosmetic Innovation in Acne Care

www.smaltis.com



Long considered mainly for its role in acne, ***Cutibacterium acnes*** is now recognized as a complex member of the skin microbiome. Naturally present on the skin, this bacterial species includes several phylotypes

whose biological properties may differ, particularly in terms of host interaction, production of virulence-associated factors, and pro-inflammatory potential. This diversity opens up valuable perspectives for the preclinical evaluation of cosmetic actives targeting acne-prone skin.

At Smaltis, we support ingredient laboratories and finished product developers in the microbiological exploration of this topic. **Our expertise is based on controlled bacterial culture**, the handling of demanding strains, and the development of tailored in vitro protocols adapted to screening, active comparison, or mechanistic investigation objectives.

We can work with **different *C. acnes* phylotypes** to assess the effects of ingredients or formulations on bacterial growth, viability, or selected functional properties. This approach makes it possible to go beyond a simple global antimicrobial test by taking into account strain specificity and the complexity of the skin microbiome. It can also be complemented by the preparation of *C. acnes*-derived products such as biomass, supernatants, or cellular fractions, intended to study their impact on skin cell models, for example in the context of inflammatory responses or mechanisms involved in the **skin-microbiome balance**.

Positioned upstream of clinical studies, **these in vitro approaches represent a valuable tool to guide product development**, document a scientific rationale, and better understand interactions between skin bacteria, cosmetic ingredients, and skin cells.

At the interface between microbiology, cell biology, and cosmetic innovation, **Smaltis provides its know-how to support robust, customized, and scientifically grounded preclinical evaluation**.

Gen Z & Microbiome

Raised on social media, this generation scrutinises ingredient lists, speaks fluently about the skin barrier and expects brands to substantiate their claims. Microbiome claims fit naturally with this mindset: the concept is easy to grasp, highly visual and closely linked to long-term skin health. For brands, this means that "microbiome-friendly" is no longer a mere marketing argument. It has become a purchasing criterion, and a young, sceptical audience will look for scientific evidence behind every promise.

Prebiotic, probiotic and postbiotic positioning continues to expand, yet young consumers are quick to spot claims that are not supported by results. This is where testing becomes a genuine competitive advantage for innovation in this field. Moreover, young skin, shaped by hormonal influence, has its own specific characteristics, such as sebaceous activity. Beauty routines involving frequent product layering, as well as potential exposure to pollution, must also be taken into account when designing clinical studies.



Skin-Brain-Gut Axis

The skin-brain axis is situated within a recent body of scientific literature that connects it to the older and better-established gut-brain-skin axis. Skin and brain share a common embryological origin, the ectoderm, and produce similar neuropeptides. Keratinocytes release corticotropin-releasing hormone (CRH) and substance P, activating immune cascades, while the skin locally expresses components of the hypothalamic-pituitary-adrenal (HPA) axis and produces cortisol. Increased abundance of *Cutibacterium* has been associated with reduced stress levels, and a notable overlap has been observed between inflammatory skin conditions (psoriasis, atopic dermatitis, acne) and psychiatric disorders (depression, anxiety).

Three neuroimmune pathways help explain this link: an immune pathway, in which skin barrier disruption releases cytokines that act on the brain; a sensory pathway, in which pruritus and pain associated with certain dermatoses activate emotion-processing brain circuits, disrupting sleep and amplifying psychological distress; and a neuroendocrine pathway, in which cortisol in turn alters skin barrier function and microbial ecology. This evidence nonetheless remains largely correlational, with no direct causality yet demonstrated in humans.

Incorporating the gut broadens the picture further: chronic stress, via cortisol, weakens the intestinal barrier and allows lipopolysaccharides to enter the bloodstream, sustaining systemic inflammation that affects both brain and skin. Acne, psoriasis and atopic dermatitis are thus reframed as multi-organ conditions rather than purely localized disorders, opening the way to therapeutic approaches combining microbiome modulation, stress management and integrative care.

Other work redefines the skin as a fully-fledged neuro-immuno-endocrine organ, articulating three interconnected axes and laying the groundwork for mechanistically grounded neurocosmetic strategies targeting stress and emotional wellbeing. The skin microbiome thus emerges as a **plausible mediator** of this axis, though all authors call for further interventional trials to establish genuine causality.



The Specificity of the Scalp Microbiome

The scalp is often regarded as an extension of facial skin, yet it is in fact a distinct ecosystem. The density of hair follicles, the abundance of sebaceous glands and a warmer, more humid environment create conditions that shape its bacterial communities. *Cutibacterium* and *Staphylococcus* coexist with yeasts of the genus *Malassezia*, and their overall balance is essential to scalp health.

When this balance is disrupted, it may manifest as dandruff, itching, excess sebum or heightened sensitivity. In the wave of hair care "skinification", scalp care increasingly targets the microbiome, with shampoos, serums and treatments formulated to respect or rebalance the flora rather than merely to cleanse.

This autumn, scalp odour has become a talking point, a trend most likely inspired by ranges designed for women who wear a headscarf in their daily lives.

Substantiating performance claims calls for specific methods. Sampling must be adapted to the scalp, for instance using swabs or scrubbing techniques, and protocols must consider washing frequency and product use prior to sampling. Sequencing then enables the characterisation of bacterial and fungal communities, while clinical assessment of dandruff, itching and sebum completes the in vivo evidence.

Preclinical Assays

In vitro Testing of the Cutaneous Microbiome: Foundation for Screening and Standardization



Cosmetic activity on the microbiota can be assessed through three complementary approaches (in vitro, ex vivo, in vivo), but the in vitro approach is the **fastest, most reproducible and most cost-effective** entry point for any screening effort.

A Rapid & Reproducible Screening Tool

In vitro assays, performed on isolated bacterial strains or on defined mixtures, provide a controlled and reproducible snapshot of how a product interacts with target skin bacteria. This reproducibility makes them the tool of choice for screening raw materials upstream of

formulation. They also make it possible to establish a common technical language between laboratories, manufacturers and regulatory authorities, much as was achieved with conventional preservative efficacy tests (challenge test, ISO 21147:2018). Some authors indeed regard a well-designed in vitro test as the first building block of a standardization foundation for assessing «**microbiome friendly**» claims, a condition considered necessary before any harmonization of the sector.

The limitation of this approach is ecological: only a small fraction of skin microbes can be cultured using standard techniques, and a monoculture inherently disregards interspecies interactions,

which are nonetheless decisive for the balance of the real microbiota.

Co-culture Systems to Move Closer to the Ecosystem

To narrow this gap, co-culture systems have been developed. A medium created in 2024 by Tokyo University of Science supports the concurrent growth of four key skin bacteria: *Staphylococcus epidermidis*, *Staphylococcus capitis*, *Cutibacterium acnes* and *Corynebacterium*. These defined consortia bring the in vitro test closer to the microbial reality of the skin, without, however, reproducing its full complexity.

EXCLUSIVE COLLABORATION

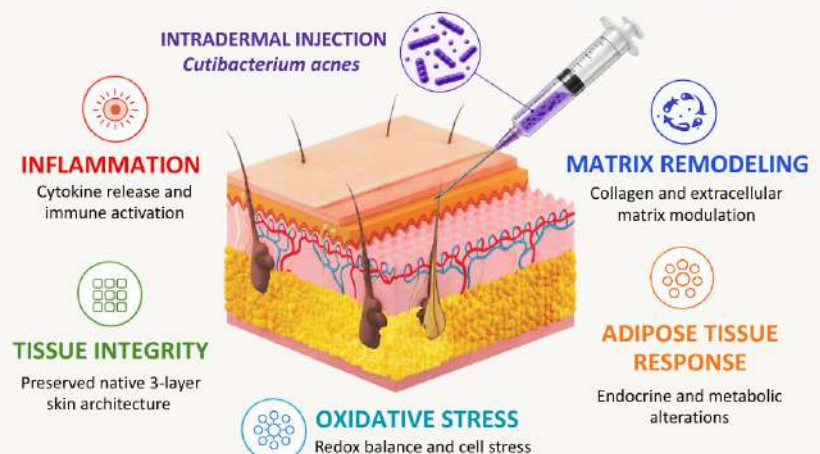
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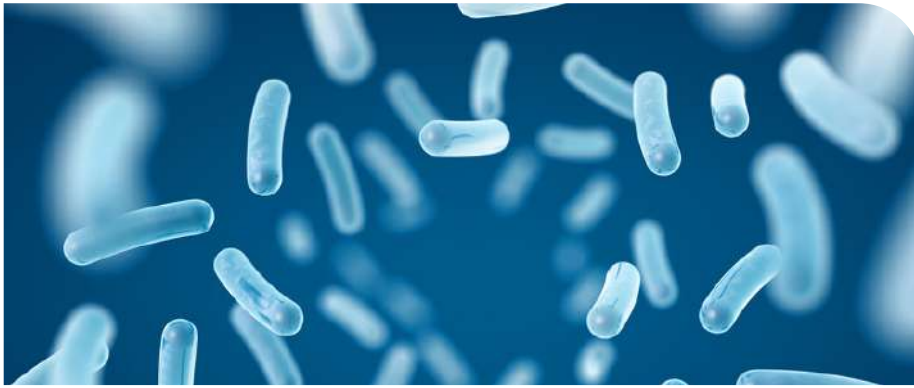
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Microbiota White Paper

Substantiating skin
microbiome claims:
from science to
evaluation

Full-thickness, **3D reconstructed skin models** represent an even more advanced extension of the in vitro approach. They make it possible to observe how skin tissue responds to bacterial presence (barrier function, inflammatory markers, antimicrobial peptides) without the **inter-individual variability** inherent to human volunteers. A model published in 2022 (Rademacher et al.) proposes precisely this type of setup to study in vitro the effects of cosmetics on skin microorganisms.

Toward Standardized Microbial Panels by Skin Zone

To gain in ecological relevance, these in vitro tests must reflect the biogeography specific to the skin: sebaceous zones (face, chest) are dominated by *Cutibacterium acnes*; moist zones (armpits, groin) by *Corynebacterium* and *Staphylococcus*; dry zones (forearms, legs) host more diverse and aerotolerant taxa. The development of standardized microbial panels specific to each zone (face, feet, vulvar area) is presented as an essential step toward a harmonized in vitro assessment of a product's «microbiome friendly» character.

An ex vivo extension, based on microbial consortia collected by **swabbing real skin**, adds a further level of complexity by assessing the viability and selectivity of skin-relevant microbial communities exposed to the product under standardized conditions. This **hybrid in vitro/ex vivo** model is presented as a scientifically robust equivalent to the classic challenge test, provided a consensus is reached on the microbial panels and experimental conditions to be used.

What *In Vitro* does not Yet Show

The in vitro approach nonetheless remains a controlled snapshot rather than a complete reflection of the real skin ecosystem: it accounts for neither the host context, nor interactions over time, nor the individual factors (genetics, lifestyle, environment) that shape the microbiota in vivo. This is why it is generally positioned as the first step in a tiered approach: the standardized in vitro test lays the foundation, in vivo sequencing studies add ecological depth, metatranscriptomics adds functional precision, and clinical evaluation confirms safety and performance under real conditions of use.

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01

The Rise of Claims
Targeting the Skin
Microbiota

02

Science & Evaluation
Designing Credible
Microbiota Claims

03

Tools and Methods
to Substantiate
Microbiome Claims

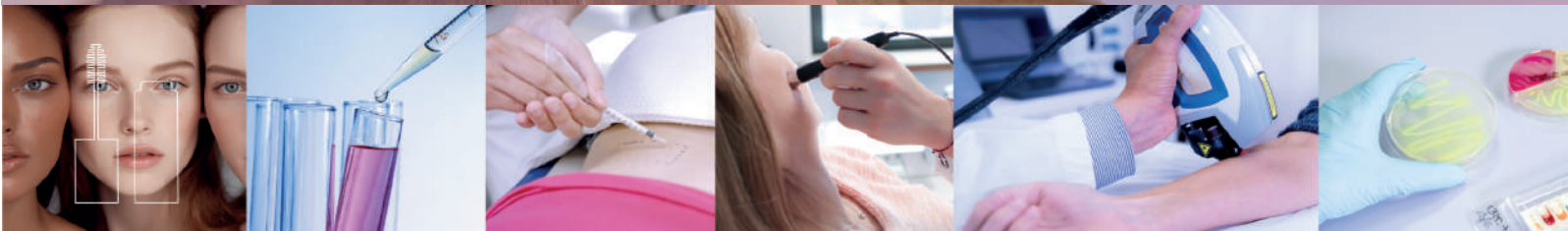


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Cutaneous Microbiome Testing News

Vibiosphen

Acne is also Down to the Microbiota!

www.vibiosphen.com/



Acne isn't just skin-deep. This complex, widespread condition takes a heavy toll on young adults' self-esteem and social confidence. A robust body of empirical evidence has firmly established that the microbiota influences the development of acne, primarily through a state of imbalance (dysbiosis). This dysbiosis is characterised by the predominance

of certain phylotypes of *Cutibacterium acnes*, which disrupts skin homeostasis by upsetting its balance with *Staphylococcus epidermidis*. Furthermore, although the exact role of the *Malassezia* genus remains unclear, it would nevertheless appear to contribute to the pathophysiology of acne. Moreover, it is important to note that the **interactions between the microorganisms involved in acne are not limited to the skin**: the gut microbiota also plays a crucial role. Thus, understanding the role of the skin microbiome opens new avenues for the treatment and prevention of acne and other skin pathology.

Zurko Research

Microbiome Balance Evaluation

www.zurkoresearch.com



Microbiome studies help us understand the real impact of each formulation on the skin. When assessing whether a product is **microbiome friendly**, we are not looking to sterilize the skin's surface, but rather to ensure that microbial communities maintain their natural diversity

and balance. To measure this compatibility, we culture general bacteria and key species such as *Staphylococcus epidermidis* (SE), an essential beneficial resident, and *Staphylococcus aureus* (SA), whose overgrowth can lead to alterations. In addition, fungal cultures provide a comprehensive view of the ecosystem. This analysis makes it possible to determine whether a **product respects and coexists harmoniously with the microbiota**, protecting the biological barrier without disrupting its natural defenses.

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www.miravex.com



Skin microbiome research is increasingly exploring how microorganisms interact with visible skin characteristics. To understand these relationships, microbiome data can be combined with objective, quantitative skin measurements. Antera 3D provides a **non-invasive** way to measure parameters including

redness, pigmentation, pores, texture, volume, fine lines and wrinkles. In a recent study published in *Microorganisms*, Antera 3D measurements were analysed alongside 16S rRNA microbiome data to investigate relationships between bacterial changes and skin quality. The study identified **correlations between specific microbial changes and several skin parameters.** This demonstrates how objective 3D skin imaging can complement microbiome analysis and help translate microbial changes into measurable skin outcomes.

Cliantha Research

Microbiome Matters: Building Stronger Evidence for Acne Care

www.cliantha.com



Acne research is moving beyond visible blemishes to explore the **skin microbiome and its relationship with inflammation** and skin health. *Cutibacterium acnes* is an important member of this ecosystem, with different strains and microbial interactions potentially influencing acne-prone skin. As a trusted CRO

partner, Cliantha supports brands through comprehensive **study planning, clinical execution, sample management,** dermatological and instrumental evaluations, safety oversight, statistical analysis, and scientific interpretation. Combined with manuscript development and publication support, this integrated approach helps bridge microbiome insights with meaningful clinical outcomes, enabling robust scientific evidence for next-generation acne care innovations.



QACS

Acne: What If the Real Target Is the Biofilm?

www.qacslab.com



For years, acne cosmetic testing has focused on whether a product can reduce *Cutibacterium acnes*. Emerging microbiome research suggests that the answer may be more complex.

C. acnes is a normal member of healthy skin microbiota, so its presence alone does not explain acne. Increasing evidence points to differences between bacterial strains and, importantly, how they behave. Certain *C. acnes* groups associated with acne show greater inflammatory activity and a stronger tendency to form biofilms than groups more commonly found on healthy skin [1].

A biofilm is a **structured community of bacteria surrounded by a protective matrix.** In this state, *C. acnes* can become more persistent and more tolerant to antimicrobial activity and host defences [1]. This raises an important question for cosmetic development: rather than simply eliminating bacteria, can products influence the behaviours associated with acne?

One emerging approach is quorum sensing, the communication system bacteria use to coordinate collective behaviours, including **biofilm formation.** Recent research in multispecies *C. acnes*–*Staphylococcus epidermidis* models has demonstrated enhanced biofilm-related activity and investigated the potential of plant-derived compounds to interfere with quorum sensing [2].

For cosmetic developers, this opens a new perspective on acne and microbiome testing. QACS, a specialized cosmetic testing laboratory, brings this **functional approach** into product development through its **Quorum Quenching Analysis.** The analysis is designed to investigate whether cosmetic ingredients and formulations can interfere with bacterial communication and reduce biofilm development, providing data on mechanisms beyond conventional antimicrobial testing.

By adding Quorum Quenching Analysis to cosmetic testing strategies, brands can explore more targeted approaches to **acne-prone skin** and develop microbiome-focused products supported by scientific evidence. **For QACS, this represents the next step** in cosmetic microbiome testing: moving from measuring bacterial presence alone toward understanding and evaluating bacterial behaviour.

[1] Dréno et al., 2024

[2] Kupke et al., 2026



Validated Claim Support Skin Microbiome Evaluation: Taking a Closer Look at Skin Health

www.validatedcs.com



The skin microbiome has become an increasingly important part of modern skincare research. Basically, the skin microbiome is the community of microorganisms, including bacteria, fungi, and other microbes, that naturally live on the surface of our skin. While the word “microbe” sometimes sounds like

something we want to get rid of, many of these microorganisms are actually a normal and important part of healthy skin.

When evaluating a skincare product, looking at the microbiome can provide researchers with another layer of information about how a formula interacts with the skin. Traditional clinical testing may focus on hydration, barrier function, redness, oiliness, or the overall appearance of the skin. Microbiome evaluation can complement these measurements by providing insight into changes in the microbial community during product use.

Microbiome testing typically involves **collecting samples from specific areas of the skin** at defined time points throughout a clinical study. These samples can then be analyzed to identify microorganisms present on the skin. Depending on the study design, this analysis can compare the microbiome **before and after** product use or evaluate differences between treated and untreated areas.

This type of testing can be particularly interesting for products positioned around **skin balance, barrier support, sensitive skin, acne-prone skin, or overall skin health**. When combined with other clinical measurements, microbiome data can help develop a more complete picture of product efficacy. For brands, adding microbiome evaluation to a clinical study can also provide a more sophisticated story to share with consumers. Rather than relying on appearance alone, companies can explore what is happening on the skin at a deeper level.

As interest in the relationship between the skin and its microbial community continues to grow, microbiome evaluation is becoming a valuable addition to the clinical testing toolbox, helping us better understand the **relationship between skincare products and healthy-looking skin**.

PhD Trials

When the Skin Tells a Deeper Story

www.phdtrials.com



What if your product could reveal more than what is visible on the skin?

At PhD Trials, we help transform **innovative cosmetic concepts** into meaningful scientific evidence. By integrating **standardized skin microbiome sampling** into carefully designed

clinical protocols, we create new opportunities to explore how products interact with skin biology in a deeper and more comprehensive way.

And the microbiome is only part of the story. Our studies can combine this approach with **advanced in vivo endpoints** such as senescent cell assessment, mitochondrial cellular activity, predictive wrinkle evaluation, scalp dandruff assessment, 3D pore characterization, bound/unbound water assessment, or even in vivo IL-6 evaluation...

By connecting complementary technologies, we help uncover **new dimensions of product performance** and build stronger, more differentiated scientific stories around your cosmetic claims.

What story could your product tell next?

Courage+Khazaka

Healthy Skin, Healthy Microbiome

www.courage-khazaka.com



Although the skin microbiome has been studied extensively in dermatological and cosmetic research, there is still no consensus on its ideal composition. Influenced by numerous intrinsic and external factors, it comprises a wide variety of microorganisms.

While many skin disorders are associated with shifts toward potentially harmful organisms, microbiome-focused cosmetics are primarily tested to ensure they do not disrupt or reduce microbial diversity.

A healthy microbiome supports healthy skin and healthy skin features a healthy microbiome. Established methods can **objectively assess key indicators of skin health**, including hydration (Corneometer®), sebum (Sebumeter®), TEWL (Tewameter®), pH, gloss, topography (Visioscan®), elasticity (Cutometer®), bacterial activity (Visiopor®) and redness (Mexameter®).

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Byome Labs

Skin Microbiome Evaluation: Taking a Closer Look at Skin Health

www.byomelabs.com



The skin microbiome has become a key focus of cosmetic research as growing scientific evidence highlights its essential role in maintaining skin health, resilience, and overall appearance. As interest in **microbiome-friendly** skincare continues to grow, reliable methods for assessing this complex ecosystem are

becoming increasingly important.

Today, skin microbiome evaluation relies on several complementary approaches. **High-throughput sequencing technologies** provide an in-depth characterization of microbial diversity and remain the reference method for microbiome research. Alongside these analytical techniques, *in vitro* microbiology models play a crucial role in evaluating how cosmetic ingredients and finished products interact with representative skin microorganisms under controlled laboratory conditions. Together, these approaches provide valuable insights into **both microbiome composition and product performance**.

At BYOME LABS, we specialize in *in vitro* microbiology testing to assess the **impact of cosmetic formulations on key skin microorganisms**. These studies help cosmetic brands better understand the effects of their products on the skin microbiome, support microbiome-related claims, and guide the development of formulations that respect the skin's natural microbial balance.

Building on this scientific expertise, BYOME LABS has developed BYOME DERMA, a **rapid diagnostic solution** designed to make skin microbiome assessment accessible beyond the laboratory. Combining a **non-invasive sampling method**, a **rapid antigen-based immunological test**, a **mobile application**, and a proprietary artificial intelligence engine, BYOME DERMA provides a personalized microbiome profile in just two minutes.

More than a rapid test, BYOME DERMA introduces a new way of understanding the skin microbiome by enabling its monitoring over time. Thanks to a **proprietary database** linking cosmetic products to microbiological data generated in our laboratories, our **AI engine** recommends the most suitable products for each individual microbiome profile. By bridging scientific evaluation with real-world personalization, BYOME DERMA represents a **significant step toward precision skincare**, empowering both consumers and brands with fast, accessible, and actionable microbiome insights.

Complife member of GBA Group

Understanding and Testing the Skin Microbiome

www.complifegroup.com



Healthy skin is a dynamic, non-sterile ecosystem. Rather than targeting total microbial eradication, modern formulation strategies focus on preserving and respecting this delicate natural balance to maintain skin health and barrier function.

Because skin represents a **multi-layered, highly variable habitat** across different body sites, microbiome testing requires a tailored, scientifically rigorous methodology. To substantiate «**microbiome-friendly**» claims, testing protocols must generate robust, site-specific data aligned with the precise claim being made combining targeted sampling with comprehensive clinical measurements to prove a formulation supports microbial homeostasis without disruption.

Complife bridges **advanced microbiome science with regulatory-grade claim substantiation**. Combining state-of-the-art laboratory infrastructure with specialized R&D expertise, Complife designs customized, scientifically validated testing protocols that empower brands to confidently evaluate, verify, and market their products' microbiome compatibility.

Goya Innova

The Skin as an Ecosystem: New Strategies for Modulating the Skin Microbiome

www.goyainnova.com



The skin microbiome is a functional ecosystem essential for homeostasis, barrier function, immune regulation, and resilience against the exposome. Advances in sequencing, metagenomics, and metabolomics are improving our understanding of its interactions with cosmetics, inflammation,

and aging. Innovation is increasingly focused on prebiotics, postbiotics, and microbial metabolites capable of selectively modulating the ecosystem without introducing live microorganisms. Clinically, **the objective is to preserve microbial diversity, physiological pH, barrier integrity, and skin tolerance**. In the absence of a specific global regulatory framework, successful strategies must integrate scientific evidence, safety, appropriate cosmetic claims, and differentiation, driving effective, sustainable, responsible, and **scientifically supported microbiome-friendly cosmetics worldwide**.



LATEST TESTING NEWS

The testing landscape moves fast. In this section, our partners share their latest innovations, new methods and recent results, so you can see what is now available to support your product development and claims.

Latest Testing Overview

Weneos

Recognized for its Sustainability and Cybersecurity Commitments

www.weneos.com



WENEOS reaches a new milestone in its continuous improvement journey, earning two distinctions in 2026: the **EcoVadis Gold Medal**, placing the company in the Top 5%, and the **CyberVadis Bronze Medal**.

These recognitions highlight two key areas of WENEOS' commitment: **environmental, social and ethical responsibility**, as well as cybersecurity, data protection and risk management.

Through these achievements, WENEOS reaffirms its commitment to providing clients, partners and employees with an increasingly **responsible, secure and trusted environment**, while continuously strengthening its practices to meet today's sustainability and cybersecurity challenges.

Pixience

C-Cube: Standardized Imaging for Objective Skin Assessment

www.pixience.com



Clinical efficacy is increasingly expected to be both **measurable and visible**. C-Cube Clinical Research addresses this challenge through a **microdermoscopic approach** combining standardized **high-resolution imaging**, calibrated color and objective 3D surface assessment. Automated image analysis streamlines the evaluation of key **skin and hair parameters**, while controlled acquisition ensures reliable comparison over time. With no complex acquisition setup and a compact, easy-to-use design, the system integrates naturally into clinical protocols in routine studies. Beyond **quantitative results**, each measurement remains linked to a **high-quality image**, providing powerful before/after evidence for scientific teams and compelling visual content for claim substantiation and marketing communication.

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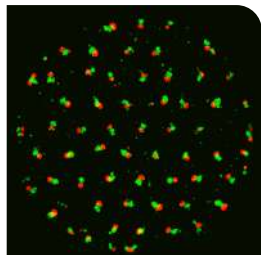
find more on
our website
weneos.com



Ellead

Gains Attention with Innovative 3D Hair Follicle Organoid Testing

www.ellead.com/eng/



ELLEAD is gaining attention in the bio-research and cosmetics industries with its innovative 3D hair follicle organoid testing service.

The technology was recently published in the international journal Biomaterials

Research, highlighting its scientific reliability and potential for hair growth research.

Using a specialized substrate that mimics the extracellular matrix conditions of living tissue, the 3D co-culture system enables high-throughput screening with strong reproducibility and ease of use.

The platform can rapidly analyze more than 100 results for a single hair growth-promoting substance and provide experimental results within two weeks.

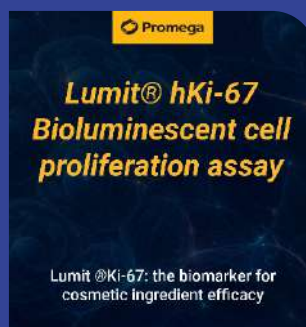
ELLEAD is actively providing this service and continues to receive positive responses and high satisfaction from its growing number of clients.



Promega

Lumit® hKi-67: A Novel Bioluminescent Immunoassay for Assessing Cell Proliferation

www.promega.com



Evaluating the efficacy and safety of cosmetic ingredients requires reliable technologies that measure cell viability and cellular activity. Lumit® hKi-67, a bioluminescent technology based on enzymatic complementation, offers a robust and sensitive solution for quantifying cell proliferation.

The Principle

The assay uses two antibodies directed against hKi-67 protein, expressed exclusively in actively dividing cells. Each antibody is labeled with a NanoBiT Luciferase fragment : LgBiT and SmBiT. When hKi-67 is present in the cell, these two fragments come into proximity and reassemble into a functional luciferase. Addition of the NanoLuciferase substrate then generates a luminescent signal proportional to hKi-67 levels and thus to cell proliferation.

Practical Advantages

Bioluminescent technology offers superior sensitivity compared to colorimetric methods as MTT, reducing background noise and improving detection sensitivity.

The assay requires no wash steps, reducing handling time and assay variability. It enables detection of proliferation changes as early as 24–48 hours and operates in both 96- and 384-well formats.

This technology distinguishes active proliferation from simple cell viability. Indeed, there are two distinct parameters particularly relevant for assessing cosmetic ingredient efficacy and tolerability.

Multiplexing capability is further enhanced by compatibility with CellTox™ Green, enabling simultaneous measurement of proliferation and cytotoxicity in the same well — a powerful approach for comprehensive toxicology and efficacy screening in cosmetic and pharmaceutical applications.

Applicability

Lumit® hKi-67 has demonstrated robust performance in both 2D cell cultures and 3D spheroids and organoids, and now extends to reconstructed human epidermis (RHE), offering flexibility for increasingly complex biological models used in cutaneous biology. **Its integration into high-throughput workflows facilitates systematic screening of cosmetic ingredients.**



DermaProof Asia
EFFICACY AND SAFETY TESTS OF DERMATO-COSMETICS

Dermaproof Asia

Elevates its Imaging/Photographic Testing Services

www.dermaproofasia.com



Photography plays an essential role in cosmetic claim substantiation by providing a **clear and permanent visual record of a test product's effects on appearance**. Image analysis performed on **standardized digital photographs** enables the objective assessment and quantification of features such

as **wrinkles, pigmentation, skin texture, redness, shine to cite just a few examples**. Consistent lighting, camera settings, subject positioning, and acquisition procedures allow reliable **before-and-after comparisons** while reducing the influence of subjective observation.

Photographs also complement **instrumental measurements, expert grading, and consumer feedback** by demonstrating whether reported improvements are visible and cosmetically meaningful. In addition, they enhance study traceability and regulatory robustness by documenting outcomes, facilitating independent review, and providing evidence that marketing claims accurately reflect the results observed during testing.

DermaProof Asia has recently acquired a **new facial imaging system, ColorFace® (QIMA Newtone)**, further expanding its equipment portfolio, which already included two VISIA®-CR systems and one VISIA® 7 system from Canfield Scientific, **two proprietary VisioFace® systems**, video-microscopes, and an **Antera 3D camera from Miravex**.

This investment significantly strengthens the company's imaging and testing capabilities. Photography under a wide range of acquisition conditions, including **visible and UV illumination, parallel- and cross-polarized light**, and microscopic and macroscopic imaging, supports the assessment of facial and body skin, as well as hair.

These advanced technologies enable DermaProof Asia to provide a **broader range of imaging and image-analysis services** for cosmetic claim substantiation. Our testing solutions cover a wide variety of products, from make-up, including mascaras, lipsticks, and foundations, to toiletries, body-care, skincare, and haircare products.

We encourage you to contact us to learn more about our complete imaging capabilities and tailor-made study protocols.

Syres

Pet Care Consumer Studies: Giving a Voice to Those Who Cannot Speak

www.syres.com



At SYRES, the **growth of the Pet Care sector** is opening new ground for evaluation science. Our challenge is not to adapt human protocols to dogs and cats, but to **build approaches that account for the animal itself**, its behaviour, its physiology, its environment, alongside the owner's perception.

This calls for a **new generation of protocols**, combining instrumental measurement, veterinary expertise, behavioural observation, in-home usage tests and non-invasive alternatives to conventional testing.

In this approach, the animal is no longer a «test subject»: **it is a user whose experience has to be understood** without ever being able to ask. This is the central scientific challenge of Pet Care testing.

NovoBliss Research

Innovation: Wearable EEG Assessment of Skin-Brain Interactions in Atopic Dermatitis

<http://www.novobliss.in>



NovoBliss Research has developed and clinically evaluated a novel methodology to objectively assess **skin-brain interactions in individuals with atopic dermatitis** using wearable **electroencephalography (EEG)**. This exploratory clinical investigation demonstrated the

feasibility of integrating **neurophysiological biomarkers** with conventional dermatological assessments to capture immediate cortical responses associated with skin irritation and soothing interventions. The study established wearable EEG as a sensitive, non-invasive tool for evaluating neurosensory changes that are not captured through traditional subjective assessments alone. By bridging dermatology and neuroscience, NovoBliss Research offers an **innovative, reproducible approach** for substantiating sensorial and efficacy claims, supporting product development, advancing clinical research, and enhancing confidence in skincare solutions for sensitive and atopic skin.

As part of our continued commitment to innovation, our latest capabilities include Scanning Electron Microscopy (SEM), Transmission Electron Microscopy (TEM), Fourier Transform Infrared (FTIR) Spectroscopy for in-vitro hair case assessment to assess hair bond repair and cuticle lifting/sealing, the MX3 Hydration Testing System (Pro Version) for assessing **salivary osmolality and hydration status**, and advanced microbiome research focused on reducing **H₂S-releasing microbes** and understanding their role in promoting **oral health** and overall wellness.



03

BEAUTY TESTING TRENDS

Longevity, emotional efficacy, digital twins, multi-omics: consumer expectations and technologies are reshaping how cosmetics are evaluated. Here are the trends to watch, and what they change for efficacy and safety studies.

no miracles, just science[®]



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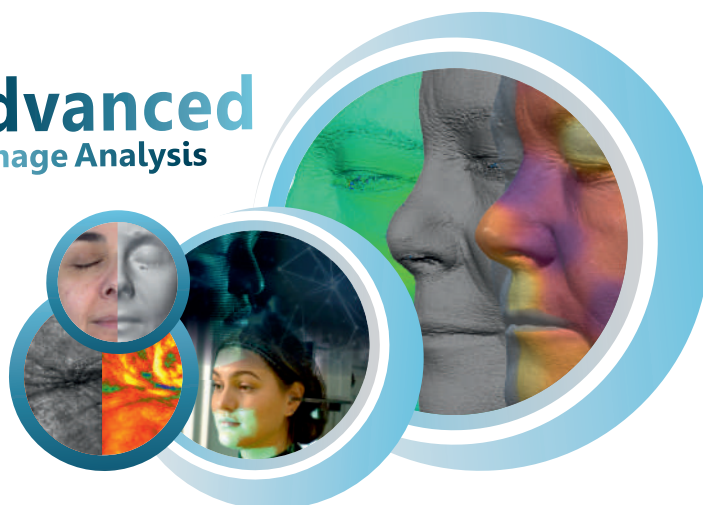
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Abstract

Menopause represents a pivotal, non-linear phase of cutaneous ageing, driven by endocrine and epigenetic mechanisms in which both hormone levels and signal rhythmicity are determinant. Against a rapidly ageing demographic backdrop, women aged 65 and over now exceed 20% of the population across the EU, Japan, South Korea and the United States, menopausal skincare has emerged as a strategic market segment, valued at USD 1.34 billion in 2025. Yet most peri- and post-menopausal women experience multiple, emotionally significant cutaneous changes while remaining insufficiently informed.

The skin is a hormone-responsive and actively steroidogenic organ, capable of local intracrine synthesis of androgens, estrogens and corticosteroids independently of systemic hormonal status. The menopausal transition is associated with documented histological alterations, including a roughly 30% decline in dermal collagen within five years of the final menstrual period and estrogen-dependent microbiome dysbiosis, underlying dryness, loss of firmness, pigmentary irregularities, hormonal acne and alopecia.

In response, the industry is shifting from generic anti-ageing toward a holistic «pro-age» positioning, substantiated through adapted multi-ethnic protocols combining biometrology, expert scoring, biomarkers and omics technologies, supporting a precision-driven, life-stage-adapted model of scientifically substantiated positive ageing.

Skin and Menopause Substantiating Promises & Performances

An Accelerating Societal Context

Why menopausal skin has become a strategic priority for the cosmetic industry?

Demographic ageing, pronounced within the female population, is accompanied by an extension of healthy life expectancy and is reshaping expectations regarding cosmetic care. This shift is now a defining feature of the global population landscape. **In the European Union, 22.0 percent of the population was aged 65 or over** as of January 2025, up from 21.6 percent the previous year, with Italy (24.7 percent) and Portugal (24.3 percent) among the most affected countries. The trend is even more pronounced in Asia: Japan, the world's most aged nation, reported that 29.3 percent of its population was 65 or older in 2024, while South Korea officially crossed the 20 percent threshold in 2025, entering the ranks of «super-aged» societies. In the United States, the share reached 18.0 percent of the population, or 61.2 million people, in 2024, continuing a steady rise from 12.4 percent two decades earlier. For all female populations, the associated **hormonal transitions affect**

the skin, the integumentary appendages and emotional balance concurrently. **Perimenopause and menopause** constitute pivotal periods, characterised by increased **dryness and reactivity, loss of firmness and density, redness, hot flushes, hormonal acne and hair loss**, together with a notable psychological impact such as sleep disturbances, mood lability and declining self-confidence. This dual dimension, both **biological and emotional**, underlies the demand for targeted solutions and the corresponding adaptation of evaluation protocols.

Market Trends and Women's Expectations

The global menopause skincare market was valued at approximately USD 1.34 billion in 2025 (Grand View Research) and is projected to reach USD 1.47 billion in 2026. Over the longer term, it could attain USD 2.92 billion by 2033, at a mean annual growth rate of 10.3 percent. For 2025 and 2026, the segment ranges broadly between USD 1.3 and 3.4 billion depending on its definition, growing at roughly 9 to 10 percent per year. Europe accounted for 28.0 percent of market revenue in 2025, driven by its





ageing female population and the rising demand for age adapted solutions.

Women lived experience confirms the scale of this need. An international survey of more than 4,300 peri and post-menopausal women across nine countries, presented by Galderma at IMCAS 2026 in Paris, reveals that menopause triggers multiple cutaneous changes while awareness of the subject remains limited. On average, women report three distinct changes, most frequently lines and wrinkles, loss of firmness and elasticity, dryness and a duller complexion, rated six out of ten in severity. These alterations weigh on emotional well-being: 60 percent of respondents feel less attractive, 57 percent anxious, 55 percent less confident and 46 percent less sociable (1). The survey also exposes a substantial knowledge gap: more than half of women discover these changes only upon experiencing them, typically in their forties, while 30 percent would have wished to be informed as early as their thirties. This lack of anticipation favors corrective aesthetic treatments over genuinely preventive approaches.

The specificity of the Menopausal Skin

The endocrine and structural mechanisms that justify a life stage adapted, precision approach.

The Skin as a Hormone Sensitive Organ

Recent approaches shared at the Cosmetotest Symposium in March 2026 converge towards a redefinition of the skin as a **hormone responsive organ**, reflecting systemic physiological transitions. The endocrine epigenome

provides a unifying interpretative framework: hormones durably modulate gene expression, thereby explaining how an identical genome can give rise to distinct phenotypes, ageing kinetics and adaptive capacities.

Circadian hormones such as melatonin, cortisol as a key mediator of metabolism and stress via the hypothalamic pituitary adrenal axis, and female sex hormones jointly orchestrate **tissue repair, inflammatory balance, extracellular matrix homeostasis and barrier integrity**. Of particular note, cutaneous biology appears to depend not only on hormone levels but also on the rhythmicity and coherence of endocrine signals. Regular profiles support balanced adaptation, whereas dysregulated states increase vulnerability and alter ageing trajectories, most markedly during phases of hormonal variability such as the menstrual cycle and the peri to post-menopausal transition.

This framework justifies a shift from symptom oriented anti-ageing towards a biologically informed well ageing model, structured around molecular networks such as barrier function, dermal remodeling, inflammatory cascades, pigmentation pathways, sebaceous activity and microbiome dynamics, rather than around a single target or ingredient.

Staging the Menopausal Transition: From Premenopause to Postmenopause

The menopausal transition is scientifically described according to the STRAW+10 system, the reference framework in reproductive endocrinology, based on menstrual cycle characteristics and hormonal markers (FSH, AMH, inhibin B).

Premenopause corresponds to the full reproductive period: regular cycles, followed by a slight, discreet decline in AMH and antral follicle count towards the end of this period, without perceptible change.

Perimenopause begins with marked cycle variability, elevated but fluctuating FSH, and subsequently progresses to skipped cycles or amenorrhea, with unpredictable residual ovarian activity. FSH, or **follicle-stimulating hormone**, is secreted by the anterior pituitary gland and constitutes the key marker of ovarian ageing and the menopausal transition. This late stage, lasting 1 to 3 years, accounts for the majority of hot flushes and night sweats. It ends 12 months after the final menstrual period (2).

Postmenopause begins retrospectively from this point. Its early phase (5 to 8 years) is characterised by rapid changes in FSH and estradiol before stabilisation; vasomotor symptoms frequently persist during this period. The late phase marks a definitive hormonal stabilisation, in which overall somatic ageing becomes the dominant factor.

Menopausal Skin: an Active Steroidogenic Organ

Skin is not merely a passive target of circulating steroid hormones, it is itself a peripheral steroidogenic organ, capable of locally **synthesizing its own steroids**, a phenomenon known as cutaneous «intracrinology» (3). The cell types involved are keratinocytes, dermal fibroblasts, hair follicle cells and, most notably, sebocytes, the most steroidogenically active, a point worth considering when selecting models and skin sites for efficacy testing.

The mechanism relies on cutaneous uptake of adrenal DHEA/DHEA-S, locally converted by cutaneous enzymes (3 β -HSD, 17 β -HSD, 5 α -reductase, aromatase). This produces active androgens (testosterone, DHT, linked to sebum production, hormonal acne and androgenetic alopecia), estrogens (estradiol, estrone) and corticosteroids (4).



This mechanism helps explain the diversity of manifestations observed in peri- and postmenopause: as ovarian estrogen production declines, adrenal DHEA, still taken up by the skin, allows residual local synthesis of estradiol or DHT, depending on the **enzymatic balance specific to each skin site and each woman**. This locally produced androgen/estrogen ratio contributes to the relative hyperandrogenism characteristic of perimenopause, while also modulating dryness, loss of firmness and sensitivity. For dermocosmetics, this dimension supports an evaluation approach that also targets the enzymatic pathways and biomarkers of this local metabolism, guiding the development of actives that modulate cutaneous 5α -reductase or aromatase, closer to the skin's actual physiology than to systemic hormonal status alone.

Cutaneous Signs of Menopause

The sustained decline in estrogen results in intrinsic cutaneous ageing comparable to age related ageing, yet accelerated and accentuated. Its manifestations are progressive and **highly variable between individuals**. Dryness is among the earliest signs of estrogen deficiency; in perimenopause, it is compounded by relative hyperandrogenism such as acne, hirsutism and hair loss, arising from the loss of balance between androgens, estrogens and progesterone.

These signs may be categorized along several axes:

- **Color and pigmentation:** redness, senescent age spots, loss of radiance and complexion homogeneity.
- **Skin topography:** crow's feet, furrows, forehead lines, fine lines of the upper lip and periorbital area, roughness.
- **Hydration:** drier epidermis and dermis, reduction in natural moisturizing factors.

- **Skin structure:** loss of density and thickness, alteration of the dermo epidermal junction and barrier function.
- **Volume:** slackening of the face and neck, loss of facial contour, eye bags, eyelids.

- **Biomechanical properties:** loss of firmness, tone and elasticity.

These signs are frequently accompanied by alopecia and nail alterations, as well as hot flushes and vascular disorders.

Histological Changes

The structural changes observed at menopause are now well documented. At the epidermal level, a decrease in the **number of cell layers, a slowing of cell renewal and a loss of adhesion at the epidermal junction** are observed. At the dermal level: a decline in cellular activity and number; a **reduction in collagen** content of approximately 30 percent within the five years following menopause; a modification of the collagen III/I ratio; an increase in metalloproteinases (MMP 1 and MMP 3, degrading enzymes); a rarefaction and horizontalization of collagen fibers; a decrease and disorganization of **elastic fibers**; a reduction in hyaluronic acid, essential to dermal hydration; and a thinning and dilation of vascular walls.

The Role of the Cutaneous Microbiome

The decline in estrogen also disrupts the cutaneous ecosystem. A reduction in microbial diversity and an imbalance, or dysbiosis, are observed, associated with decreased sebum, elevated pH and a weakened barrier. The depletion of lipids reduces sebum dependent Cutibacterium, thereby altering the equilibrium of bacterial communities. This dysbiosis is associated with diminished resilience,

heightened inflammation (inflammaging) and dryness. The precise host microbiome interactions nonetheless remain poorly characterised: metagenomic approaches now aim to map these dynamics in order to develop targeted microbiome modulation strategies.

From Anti-ageing to Pro-age: a Holistic Response

How brands are repositioning around menopause, and destigmatizing the transition.

Once dismissed by anti-ageing marketing that rendered them invisible, menopausal women are now courted by brands working to destigmatize this transition through dedicated skincare and campaigns featuring women in their fifties. Incorporating well-being, the term «pro-age» proves more fitting than «anti-ageing,» considering the skin holistically: such care stimulates microcirculation, supports collagen, hydrates and redefines contours while delivering emotional and sensory benefits, hence evaluation integrating perception and quality of life. Menopause and the exposome constitute cumulative ageing processes; intrinsic hormonal ageing combines with reversible extrinsic factors (sun, tobacco, pollution, diet, stress), the disturbances accentuating intrinsic and photo-induced signs alike. Certain brands claim scientific precedence: Vichy launched its first menopause skincare line in 1992, supported by 30 clinical studies involving more than 1,500 women and 9 scientific publications to date. Its range is structured by hormonal stage, with Peri Menopause and Post Menopause Day and night creams designed to restore hydration, plump the skin and improve firmness.

Evaluating the Performance of Skincare

Adapted protocols and testing categories for scientifically substantiated claims.

To demonstrate the efficacy of such skincare clinically, protocols have been adapted: panels now include pre-menopausal and menopausal women presenting with targeted signs such as dryness, slackening and heightened sensitivity, and rely on international, multi-ethnic studies that capture the

diversity of skin types.

Five principal categories of testing are deployed:

- Consumer tests and self-assessments;
- Sensory or emotional analyses;
- Biometrological studies covering hydration, resistance and biomechanical properties;
- Clinical scoring;
- Biology and biomarkers.

Evaluation benefits from **combining subjective perception with objective measurement**: questionnaires identifying the most frequently experienced changes, cross referenced with instrumental data and expert assessments, afford a holistic, evidence-based reading of the genuine impact of hormonal fluctuations. In the Skinobs database, evaluation managers can for free find more than 200 methods related to this question and contact more than 500 testing laboratories worldwide for in vitro and in vivo studies of dermocosmetics or ingredients performances.

At the **molecular level**, the expression of hydration related genes such as filaggrin and aquaporin 3, or of markers associated with androgenetic alopecia, is monitored. At the **biomechanical level**, suppleness, rigidity and tissue resistance are quantified to measure the tightening or firming effect. Non-invasive imaging, such as LC-OTC, Confocal Microscopy, from the centimeter to the nanometer scale, visualizes the epidermis, dermal density, thickness, collagen fiber organisation, water, lipids and the dermo epidermal junction. The design of each protocol in conjunction with contract

research organisations, including inclusion criteria, measurement kinetics, treatment conditions and instrumental method, remains decisive.

Characterizing the menopausal timeline in vivo represents a further priority. Although post-menopausal alterations are well documented, perimenopause remains poorly characterised in vivo. **The biometric study conducted by Clarins** addresses this gap by examining 121 Caucasian women aged 30 to 65 years, stratified into four groups, namely pre menopause, perimenopause, early menopause (≤ 5 years) and late menopause (> 5 years), with a targeted comparison of perimenopause versus early menopause. The non-invasive parameters assessed, comprising sebum, transepidermal water loss, stratum corneum hydration, mechanical properties and standardized facial imaging, cover the functions most sensitive to estrogen deficiency and illustrate the need to characterize the transition as a non-linear continuum rather than as a simple pre to post menopause dichotomy. Beyond biomechanical and barrier parameters, hormonal fluctuations act upon the synthesis and distribution of melanin, thereby modifying complexion. These pigmentary disorders constitute a dermocosmetics target in their own right, calling for dedicated efficacy evaluation strategies.

Towards Precision Cosmetics

These approaches converge towards

precision personalization, supported by next generation of omics technologies that map hormone skin interactions at the systems level. They enable the identification of predictive biomarkers, molecular signatures and functional pathways underpinning personalized formulation, microbiome modulation and clinically substantiated claims. Whether addressing **ageing, radiance, biomechanical properties or hydration**, evaluation methods increasingly favor higher resolution, wider measurement areas, and non-invasive, contactless techniques, with algorithms and statistics emerging as decisive future contributors. By combining classical biometric measurements with advanced devices and **specific biomarkers**, this hormonally intelligent cosmetic science deepens understanding of skin structure and function, fostering life stage adapted, evidence based positive ageing.

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Interview

From Regulation to Robust Evidence, Pascale Barlier on the Future of Cosmetic Claims



Pascale Barlier

Scientific Consultant,
Founder of Cos&Co

Cos&Co is a consulting and training firm specialising in cosmetic performance evaluation strategy, founded by Pascale Barlier. It supports its clients in developing and implementing efficacy-testing strategies and designs clinical study protocols that allow claims to be substantiated robustly. Cos&Co is also involved in validating and rolling out new measurement tools alongside equipment manufacturers, and, through operational audits, supports clinical testing laboratories with their challenges and continuous-improvement needs. In addition, Cos&Co is a Qualiopi-certified training organisation, offering courses on cosmetic performance evaluation for professionals and students alike, covering the scientific, marketing and regulatory dimensions of the field.

1. How does Regulation Support the Development of Claims that are Both Scientifically Sound and Realistic?

Cosmetics regulation pursues one essential objective: protecting the consumer, both in terms of product safety and in terms of the fairness of the information conveyed to them.

While monitoring arrangements and **regulatory frameworks vary from one country or region to another**, the need to guarantee product safety and avoid misleading consumers remains a widely shared principle.

On top of these regulatory requirements, which differ from one country (the United States, Japan, South Korea, China, etc.) or geographic zone (Europe, ASEAN, etc.) to another, come recommendations, guidelines and self-regulatory mechanisms that help frame **how cosmetic products are communicated about**. A product claim should therefore not simply be attractive from a marketing standpoint: it must be consistent with the product's actual characteristics, **understandable to the consumer**, and **supported by evidence that is both relevant and sufficiently robust**.

This requirement is also a matter of credibility and trust. The most reliable brands build the question of proof into their products from the earliest stages of development:

- Which benefits should be claimed?
- Which parameters should be measured?
- Using what methods, on what population, and under what conditions?

This approach establishes continuity between product design, its mechanism of action, performance evaluation, and the claims ultimately communicated to the consumer.

Regulatory oversight can also act as a driver of innovation. The **need to demonstrate safety and justify the benefits claimed** encourages every player in the value chain, ingredient suppliers, formulators, manufacturers, testing laboratories and brands alike, to invest in research and in new evaluation methodologies. This, in turn, deepens

our understanding of the skin and its appendages, helps identify new biological targets and biomarkers, and **drives the development of ever more powerful exploratory technologies** such as atomic force microscopy, polarimetric microscopy, multi-omics analysis, among others built on a range of skin-sampling techniques: **stripping, scrubbing, swabbing, interstitial fluid collection, VOC sensors, biosensors**, and more.

Rather than a mere constraint, regulatory requirements can therefore become a genuine driver of scientific and methodological innovation, as well as a factor of differentiation in an industry that is particularly competitive on a global scale.

Striking the right balance between innovation, freedom of communication and consumer protection therefore remains a major challenge.

2. Under Constant Pressure to Innovate, how can Cosmetics Brands Guarantee Consumers Robust Product Claims?

What exactly is meant by «robust evidence»? And how does each brand interpret this notion?

What does European regulation, which can largely be extrapolated to other regions, actually say?

Every claim must be **truthful, clear, fair, objective, and must not be misleading**. It must rest on the weight of evidence



drawn from the full body of studies, data and information available, in light of the nature of the claim and end users' general level of understanding. Studies must have been conducted using **reliable and reproducible methods**.

The robustness of a piece of evidence does not rest on simply having conducted a study. It depends on the relevance of the experimental model, the methods and protocol used, the choice of evaluation criteria, the population studied, the control of variability factors, and the scientific interpretation of the results.

The real challenge, then, is to ensure consistency between the claim, the mechanism of action, the evaluation method, and the level of evidence obtained.

The most rigorous companies build the question of evidence into product development at a very early stage. Thinking no longer focuses solely on the formula or the choice of active ingredients, but also on **how the benefits can be objectively substantiated**: which parameters should be measured? Using what methodology? On what population? At what point in time, and under what conditions of use?

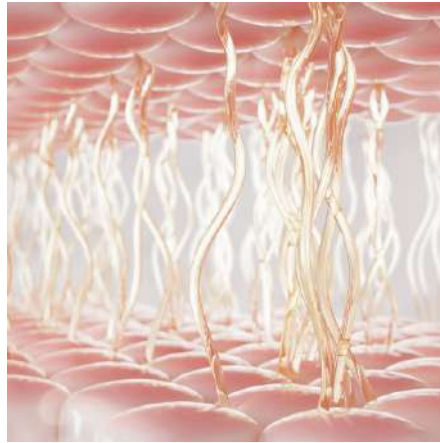
It is widely recognised that the ideal, most robust proof of product efficacy comes from **objective instrumental studies** on volunteers under **real-life conditions** of use, conditions that most closely mirror how a consumer actually uses the product.

But reaching this level of evidence takes both investment and time, and the risk of disappointing results is very real in vivo: skin responses vary from one person to another, effects can be moderate, and parameters are influenced by numerous factors. In short, the human subject, subject to multiple sources of variation, is constantly changing, and **intra-individual variability** sometimes exceeds the variation brought about by the product itself.

Competition has become so intense in recent years that manufacturers, in their drive to stand out, keep launching new products built around new claims. Imaging, cutaneous biophysics, biochemical and molecular analyses, **in vitro, ex vivo and in vivo approaches**, microbiome analysis and digital tools now

make it possible to explore mechanisms and benefits that were barely accessible just a few years ago.

Competition also has a positive effect on cosmetic innovation: it pushes players



to seek out new avenues of efficacy, new targets and new parameters worth exploring. Technological advances make it possible to identify **new mechanisms of action and new molecules** of interest, while deepening our understanding of the skin and its appendages. The development of in vitro, ex vivo and, increasingly, in silico models is opening up **new possibilities** for studying both active ingredients and finished products.

These preclinical studies are essential for documenting mechanisms of action, identifying potential effects and guiding the choice of parameters, methodologies and protocols to be used in vivo. In doing so, they help build a coherent body of evidence to support the claims made.

Without in vivo confirmation, however, it remains **difficult to extrapolate** benefits observed on a preclinical model to the consumer, except where robust correlations between preclinical and clinical data have already been established. **The central question therefore remains: to what extent will an effect observed on a model translate into a real benefit for the consumer?**

In such a highly competitive market, the temptation can be strong to scale back the level of demonstration in order to cut costs or meet a launch deadline. Some benefits are then claimed on the basis of minimal studies, or even solely on ingredients «known for...», without sufficient demonstration on the finished product.

On top of this comes a degree of

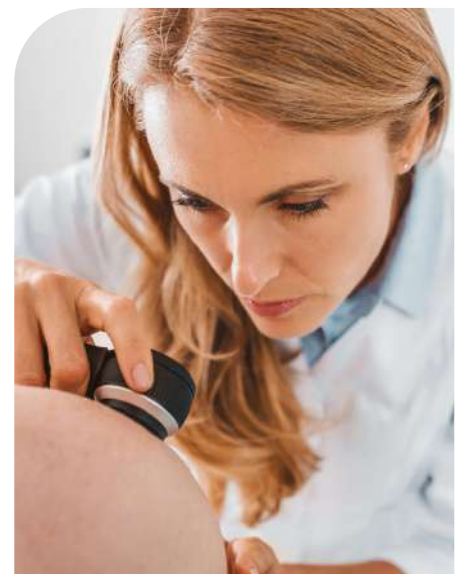
marketing escalation: scientific concepts turned into trends, ever more ambitious claims, storytelling and social media amplification, all of which can sometimes overshadow the underlying evidence. Presenting science and figures is not enough on its own. Terms such as «in vitro», «ex vivo», «instrumental testing», «clinical study» or «consumer testing» remain hard for a non-specialist to interpret. The challenge, then, is to make the **evidence understandable and tangible for the consumer**.

A genuine «**digital passport of proof**», accessible via QR code, could offer a simple explanation of the studies conducted, their conditions and the relevance of the methods used. It would help give proper credit to brands that genuinely invest in scientific substantiation.

This approach calls for more consumer education, but also better training for future professionals in cosmetic performance evaluation, a subject that is still not widely taught. Ultimately, making evidence visible, legible and understandable would help distinguish a scientifically demonstrated claim from one that is merely asserted.

When a consumer's real-world experience falls short of the benefits announced, it is not only the product in question that loses credibility. Over time, this accumulation of disappointing claims can help erode trust in the cosmetics sector as a whole.

3. How do you see *In Vivo* Evaluation Practices Evolving in the Years Ahead?





I see several major developments on the horizon. First, **better correlation between data from preclinical models** (3D reconstructed skin models) and clinical study data should help optimise in vivo evaluations. Over time, some models could become predictive enough to reduce or ease reliance on certain in vivo tests, as already illustrated by the evolution of SPF evaluation methods through the new ISO standards.

To get there, however, the relationship between these two approaches still needs to be better characterised. Brands already frequently compare results from in vitro/ex vivo testing with those of clinical studies. This is a sound approach, but it too rarely rests on a genuine scientific demonstration of correlation between the quantitative data obtained. Second, **the development of the digital twin**, already under way, should also accelerate with the rise of artificial intelligence, which will likely become an indispensable tool for modelling and prediction.

Another major development concerns the **growth of portable, wearable measurement tools**. Measurement is gradually moving out of the laboratory, allowing data to be collected under real-life conditions. The volunteer becomes more of an active participant in the study, since they can now collect and transmit certain data themselves, while still remaining under the laboratory's methodological oversight and, in the future, potentially guided by digital assistants. **Patches, smartphones, watches and other connected devices** can thus help track certain biomarkers,

visualise the **skin's day-to-day evolution**, assess how well a product holds up over time, or even collect data relating to emotional states. This development, however, hinges on one essential condition: **having tools whose reliability and metrological performance have been scientifically demonstrated**.

Reducing the need to travel to the laboratory also opens the door to studies deployed simultaneously across several countries or continents, particularly when the evaluation relies on connected devices or dedicated applications and requires different ethics panels. These new approaches will complement, rather than replace, the exploratory studies carried out in the laboratory, which benefit from sophisticated instruments and tightly controlled experimental conditions. With that in mind, I believe it is essential to involve testing providers **more closely in efforts to build robust bridges between preclinical and clinical data**.

Overall, I see a profound shift in traditional in vivo evaluation practices, opening up **new methodological perspectives and new angles of analysis**. Testing laboratories will need to support this transformation by incorporating **more digital, connected and decentralised methodologies**. But this technological shift should not make us lose sight of the fact that we are, above all, working for consumers. **Their satisfaction, their perception and the sheer pleasure of using a cosmetic product** remain essential dimensions. This subjective component, which complements objective measurements, must continue to hold an essential place in in vivo evaluations. In closing, I would say that in a sector where consumers face a constant flood of messages and new claims, the ability to offer benefits that are **realistic, understandable and scientifically demonstrated** is, in my view, one of the most effective hallmarks a brand can build for its long-term success.



Abstract

The Skinobs Barometers are based on expert scoring that draws together information gathered through exchanges with stakeholders in the testing sector worldwide, through participation in scientific congresses and industry trade shows, and through the review of scientific and marketing publications in the field of evaluation.

On this basis, Anne Charpentier, rates from 1 to 5 the importance of key cosmetic claims, testing practices and market drivers across Europe, the United States, South East Asia, South America and India. Informed by her daily work with brands, laboratories and service providers, these scores highlight trends and contrasts between the territories and help brands identify weak signals and noteworthy developments within the sector.

These barometers confirm that there is no universal truth in cosmetic claims. While moisturising unites all markets, each territory then expresses its own priorities, standards of evidence and constraints. For brands, the challenge is no longer simply to provide proof, but to provide the right proof, using the method best suited to the target market, and also to communicate clearly with consumers through relevant arguments capable of earning their trust.

Reading the market with discernment, selecting tests with rigour and formulating claims with precision, is the condition for credible innovation in beauty.

Skinobs Barometers

No Universal Truth in Cosmetic Claims

Moisturising is the only claim that every territory ranks first. Beyond it, priorities, testing practices and market pressures diverge. The October 2026 barometer compares Europe, the United States, South East Asia, South America and India.

Let us begin with the common ground. Moisturising achieves the maximum score, 5 out of 5, in all five territories. It is the foundational claim of skincare, and any brand operating internationally must be able to substantiate it before any other. Beyond this shared foundation, the barometer reveals five distinct profiles.

Five Territories, Five Priorities

Europe regards the skin as an ecosystem to be preserved. Strengthening of the barrier function, together with sensitive skin and soothing claims, both reach a score of 5. Microbiome balance, longevity, radiance and wellbeing follow at 4. Whitening and climate-related claims score only 2.

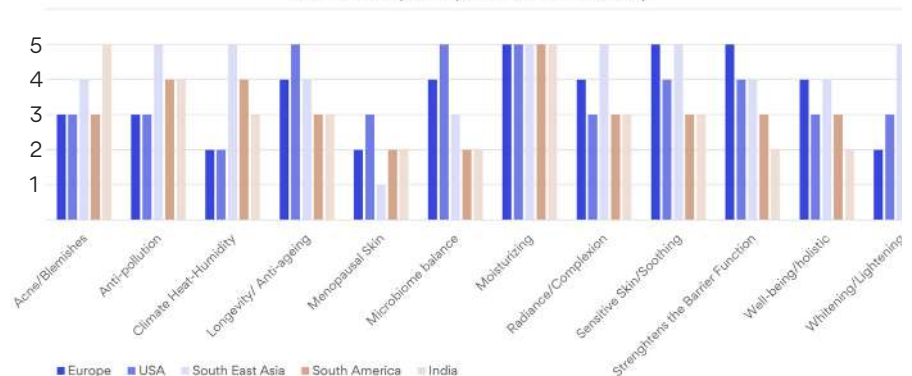
The United States takes a longer-term view. Longevity and anti-ageing, as well as microbiome balance, reach 5, while barrier function and sensitive skin stand at 4. It is also the territory where menopausal skin scores highest (3), although this claim remains a niche everywhere; it scores lowest in South East Asia (1).

South East Asia presents the most pronounced profile of the five. Six claims reach the maximum score: moisturising, anti-pollution, climate (heat and humidity), radiance and even complexion, sensitive skin and soothing, and whitening and lightening. Heat, humidity and urban pollution shape consumer expectations of products, as confirmed by our observations on the Skinobs platform: users targeting Thai laboratories search primarily for anti-pollution and sun protection claims. Microbiome balance scores 3 in the region, a sign of growing interest that has yet to become dominant.

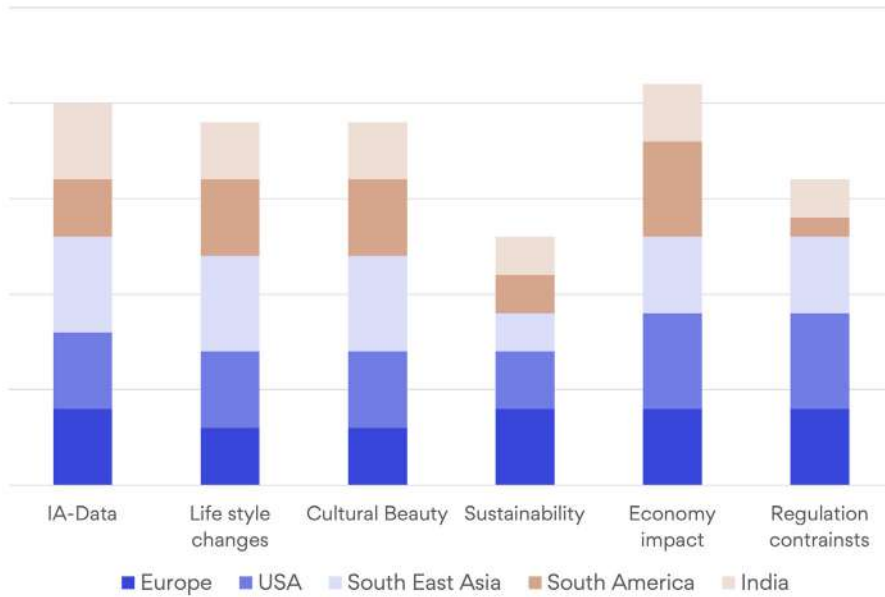
India stands apart, with acne and blemishes at 5, the highest score for this claim across all territories, on a par with moisturising. Anti-pollution, as well as whitening and lightening, follow at 4, while barrier function, microbiome balance and wellbeing all score 2. Indian demand is driven by visible, tangible concerns rather than by the notion of a skin ecosystem, which makes acne a natural gateway to the microbiome in this market.

South America shares part of this profile, with **anti-pollution, climate, and whitening and lightening** at 4 alongside **moisturising, and microbiome balance** at 2.

Main Claims per Importance and Territory



Factors influencing the testing market



How Each Market Substantiates its Claims

The October 2026 barometer on testing practices shows that territories also differ in the way they demonstrate what products and ingredients claim.

Europe favours science and sensory evaluation: complex *in vitro* models, neurosensory tests, science-based evidence, as well as biomarkers and omics approaches, all score 4, as do consumer tests, whereas before and after photographs score only 2. The United States reverses this pattern, with consumer tests and before and after photographs at 5, and complex *in vitro* models at 2.

South East Asia combines both approaches, with full-face analysis,

science-based evidence, before and after photographs and hair evaluation all at 4. It is also the territory that gives the highest score to home diagnostic devices (3), a method that remains marginal elsewhere and reaches only 1 in India. South America gives hair evaluation the highest score of the entire barometer (5), with consumer tests at 4. In India, the highest-rated practice is likewise hair evaluation (4), while most other methods remain at 3 or below.

What Shapes the Testing Market

The barometer also examines the factors influencing the testing market, and the answer varies by territory. Economic impact carries the greatest weight overall,

driven by South America and the United States, which both score it 5. AI and data come next, with South East Asia at 5 and Europe, the United States and India at 4. Lifestyle changes and cultural beauty codes follow with equal weight; in both cases, South East Asia scores 5, a sign of a market in which local beauty codes strongly guide testing choices.

The weight of regulatory constraints varies considerably depending on the target market. They score 5 in the United States, 4 in Europe and South East Asia, but only 2 in India and 1 in South America. Sustainability is the least decisive factor overall: Europe is the only territory to give it a 4, compared with 3 in the United States and 2 in the three other territories.

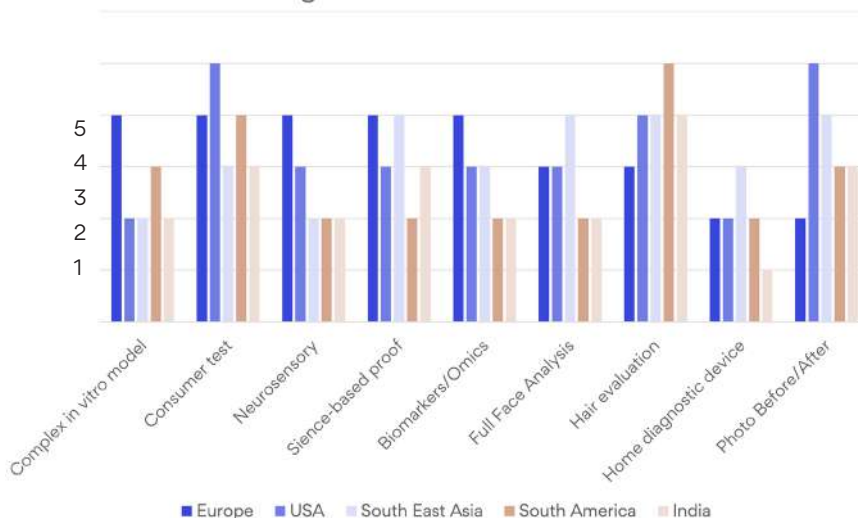
One Claim, Many Markets

A single claims dossier cannot suit every market. A microbiome-targeted product launched in Europe and the United States will find an audience receptive both to the product and to the scientific evidence that supports it. In South East Asia and India, the same product will most likely need to be linked to tangible benefits, such as acne, pollution or humidity, and supported by facial analysis or visual evidence. The question remains the same: which claim, in which territory, and which test to substantiate it?

This is precisely what Skinobs helps to answer, by connecting the evaluation managers of cosmetic brands, from indie labels to the largest groups, and of ingredient manufacturers with testing laboratories around the world.

The Skinobs Barometers are a unique strategic intelligence tool, synthesising the major global trends in the cosmetic testing market.

Testing Science Routine & Protocols



The Skinobs Barometers are a unique strategic intelligence tool, synthesising the major global trends in the cosmetic testing market.

Interview

Clinical Evaluation, from Biometric Evaluation to Longevity Testing Claims



Vincenzo Nobile

R&D Director
Complife
member of GBA Group

As R&D Director at Complife Group, Dr. Vincenzo Nobile brings extensive expertise in cosmetic science, claim consultancy, and advanced product testing. With a strong scientific background and a focus on innovation, he specializes in developing effective and cost-efficient testing strategies, with particular expertise in sunscreen efficacy, product performance, and regulatory compliance. Dr. Nobile works at the intersection of cosmetic science, regulatory requirements, and strategic decision-making, overseeing how efficacy, safety, and performance data are generated, interpreted, and defended. His work focuses on translating scientific evidence into robust claim substantiation, supporting product development, regulatory compliance, and credible communication to the market.

Why do you think Cosmetic Brands are more and more Interested in Biometric Evaluations?

Biometric evaluations are becoming increasingly important because they allow brands to move beyond perceived benefits and **demonstrate product performance through objective, quantifiable, and scientifically supported evidence.**

This is particularly relevant today because consumers are much more informed and, as a result, they are also more demanding. They increasingly expect cosmetic claims to be supported by solid and credible scientific evidence. To meet this expectation, brands need methods that can objectively demonstrate product performance, and this is where biometric evaluation becomes essential. Biometric techniques allow us to measure changes that are **not always easy to see** with the naked eye or capture through subjective evaluation alone. These changes may involve **skin hydration, barrier function, elasticity, microstructure** and, with more advanced technologies, even **deeper structural or biological effects.**

Once these changes can be measured objectively, we can go one step further. Biometric evaluation does not only tell us whether a product works but can also help us understand how quickly the effect appears, how long it lasts and, in some cases, the functional or biological mechanisms behind that effect.

This deeper level of understanding is extremely valuable for brands because it creates a direct link between scientific evidence and product communication. **Robust data can be translated into**



clear, credible and differentiating claims. At the same time, stronger claim substantiation enhances brand credibility and ultimately reinforces consumer trust.

Which Claims do you Consider most important to Validate Scientifically in 2026?

In 2026, the most important claims to validate scientifically are those that go beyond a simple cosmetic effect and describe how a product supports the **skin's function, resilience and long-term quality.**

Skin longevity and healthy-aging claims are becoming particularly important, together with claims related to skin barrier strengthening, recovery and resilience. **Microbiome-related claims** are another key area, because brands increasingly want to demonstrate that their products can support the natural balance of the skin ecosystem.

I would also include **protection and recovery from environmental stressors**, such as UV radiation, pollution or other exposome factors, as well as long-lasting performance claims.

Another important trend is the growing interest in claims linked to deeper and more specific biological processes, for example **collagen organization, epidermal homeostasis, oxidative stress response or hydration at different skin depths.** These claims are particularly relevant because they allow brands to move from a generic efficacy message to a more precise and scientifically differentiated positioning.

What is changing is the level of evidence expected. It is no longer enough to say that a product works. Brands increasingly want to quantify the effect, understand how quickly it appears, how long it lasts and, whenever possible, demonstrate the biological mechanism behind it.

This is also changing the way studies are designed. We are moving toward more **integrated approaches, combining clinical evaluation, instrumental biometry, advanced imaging and molecular techniques** to provide a more complete picture of product performance.

In the Context of Longevity-Focused Skincare, what Distinctions do you Make when Evaluating Different Claims Related to Anti-aging, Wrinkles, and Firmness Improvement?

In longevity-focused skincare, it is very important not to treat all anti-aging claims as equivalent.

“Anti-aging” is a very broad umbrella term. From a scientific perspective, it should be translated into specific and measurable effects, such as improvements in wrinkles, firmness, elasticity, hydration, barrier function or skin structure.

Wrinkle claims are mainly related to changes in **skin surface topography** and can be evaluated by imaging and 3D profilometry, looking at parameters such as wrinkle depth, volume or area.

Firmness claims are different because they refer primarily to the biomechanical behavior of the skin. Here, we evaluate parameters such as distensibility, elasticity and the ability of the skin to recover after deformation.

Longevity-related claims are broader still. They are not simply about making the skin look younger, but about maintaining skin function, resilience and structural quality over time. This may involve assessing barrier integrity, hydration, biomechanical properties, dermal organization or the skin's ability to recover from environmental stress.

So, for me, the key point is that each **claim should be translated into a specific biological or functional endpoint** and supported with the most appropriate methodology. This makes the claim more precise, more scientifically credible and more meaningful for the consumer.

How do you think the *In Vivo* Evaluation of this «Longevity» Claim should be Conducted by Testing Laboratories today?

The first step is to clearly define what we mean by “longevity”, because it cannot be evaluated with a single parameter.

A traditional anti-aging study may focus on wrinkles or firmness, while a

longevity study should take a much more multidimensional approach. We should evaluate not only how the skin looks, but also how well it maintains its function, structure and resilience over time.

This means combining different levels of assessment: skin barrier function and hydration, biomechanical properties such as firmness and elasticity, skin surface and dermal structure through advanced imaging, and potentially selected biological biomarkers associated with skin aging.

I also think resilience is particularly important. Instead of looking only at improvement from baseline, we can evaluate how effectively the skin responds to and recovers from controlled external stress. This gives us a **more dynamic picture of skin functionality**.

Another important point is time. Longevity is intrinsically a longitudinal concept, so ideally studies should include repeated measurements over longer periods rather than relying only on short-term before-and-after evaluations.

Today, we can therefore substantiate specific dimensions of skin longevity, such as maintaining skin function, improving resilience or preserving structural quality. But **we need to be cautious with very broad claims** such as **“reversing skin age”** unless we have validated biomarkers and a study design capable of truly demonstrating that effect. For testing laboratories, the challenge is to move from measuring isolated signs of aging to building an integrated picture of how well the skin preserves its quality and functionality over time.

Which *In Vivo* Biometrological Methods do you Consider best suited to Current Innovation Trends in Dermocosmetics?

The *in vivo* methods that are best suited to current innovation trends in dermocosmetics are those that are non-invasive, quantitative and able to investigate the skin at different levels.

Traditional biometrological techniques remain essential. Measurements of hydration, transepidermal water loss, skin biomechanics and color provide very robust and reproducible endpoints. But today, innovation is increasingly



coming from advanced imaging and spectroscopy.

For example, LC-OCT allows us to visualize and quantify the skin microstructure in three dimensions, while high-frequency ultrasound provides information on deeper dermal structure and density. **Confocal Raman spectroscopy** is particularly interesting because it adds a molecular dimension, allowing us to investigate hydration, NMF, skin composition and even the penetration of cosmetic ingredients. Raman spectroscopy is especially promising because it allows us to move beyond structural imaging and investigate the **molecular composition of the skin in vivo**, providing information on endogenous components and on the distribution and penetration of cosmetic ingredients.

I also see a strong trend toward **standardized digital imaging, 3D skin topography and AI-assisted image analysis**, which allow us to extract increasingly sophisticated and objective endpoints.

Another very promising approach is transcriptomics. By evaluating changes in gene-expression profiles, **transcriptomic analysis** can provide insight into the biological pathways modulated by a cosmetic product and help us better understand its mechanism of action. This is particularly relevant for emerging areas such as skin longevity, **barrier resilience, inflammation and environmental stress response**.

So, rather than relying on a single technology, I think the future is multimodal: combining classical biometrology with **advanced imaging and molecular techniques** to connect what we see clinically with what is happening functionally and structurally within the skin.

Abstract

Hydration remains the most universally sought-after cosmetic benefit, across all skin types, geographic regions and product categories combined. But the way this is proven has evolved: is a simple capacitance measurement still sufficient? Do an eye-contour serum and a lip care product call for the same methods? How can a long-lasting hydrating effect be scientifically demonstrated? R&D specifications and marketing briefs, from both brands and active ingredient manufacturers, now demand in-depth evidence, sustained effects and structural benefits. The methodological toolbox has developed accordingly, mobilizing dozens of instruments to measure, quantify and visualize hydration, from the surface down to the dermal matrix. This article examines what Skinobs data reveal about market trends, summarizes the underlying biology, and details how to match methods to claims.

A Multi-Layer Approach: Rethinking Hydration Claims

A Market Moving Toward Depth and Structure

Clinical testing activity on the Skinobs platform between January and May 2026 offers a useful window into the industry's current evidentiary priorities. Over these five months, **hydration-related searches generated 480 queries**, covering 85 distinct devices from 36 manufacturers, across 208 testing providers in 45 countries. On the preclinical side, 19 additional searches **targeted specific biomarkers**, principally hyaluronic acid, through **proteomic, morphological and histochemical approaches**.

Three developments characterize the hydration testing market. Demand is first **shifting toward the deepest layers**: infrared spectroscopy, fluorescence imaging, Raman or confocal microscopy are gaining ground over conventional stratum corneum measurement tools. Still in use, these remain less dominant as brands increasingly favor multi-layer evaluation. Second,

hydration and structural claims are converging: **ultrasound systems, spectrophotometric imaging and confocal microscopy**,

associated with density and elasticity, are increasingly featured in hydration studies, as products are now expected to reinforce skin structure over time, in connection with the growth of anti-aging and longevity claims. Finally, the testing laboratory ecosystem is global yet concentrated: **expected hydrating performance, consumers and regulatory frameworks vary by region**, such that a study

designed for a European panel cannot simply be transposed to an Asian or Latin American context, making access to robust international testing partners, with adapted protocols, essential.

Why Skin Hydration cannot be Reduced to a Single Figure

Skin hydration is not a single parameter, but the result of **interconnected mechanisms operating across the different layers of the skin**, with varying degrees of complexity and speed. It rests on several structural levels. At the surface, the hydrolipidic film and resident microbiota maintain the acidic pH required for ceramide synthesis and barrier organization; its disruption triggers a cycle of dryness in sensitive skin. In the stratum corneum, often described as a **brick wall cemented by ceramides, fatty acids and cholesterol**, this architecture limits insensible water loss; its disruption is the hallmark of dry or flaking skin. **NMF**, resulting from filaggrin degradation, retains water within corneocytes but declines with age and frequent washing. In the viable epidermis, **aquaporin-3 channels** ensure the transport of water and glycerol, their expression decreasing under UV exposure and with aging, making them a mechanistically relevant criterion in vitro and ex vivo. Finally, the dermal matrix, via **hyaluronic acid associated with collagen and elastin**, acts as a structural reservoir whose decline after age forty explains the loss of firmness, justifying measurements targeting the dermis.

Three additional dimensions must now be taken into account in designing protocols for these studies, and not merely for academic interest. The first is the **exposome**, a generic term encompassing UV radiation, particulate matter, ozone or stress. It is known to degrade barrier



lipids and accelerate water loss through oxidative and inflammatory mechanisms. It underlies new categories of claims such as pollution-protective or climate-adapted hydration. Next, **peri- or post-menopausal skin**, with its distinct physiological profile, is a specific development axis for the evaluation of hydration claims. Indeed, **declining estrogen levels reduce NMF content**, alter lipid organization, decrease dermal hyaluronic acid synthesis and downregulate aquaporin expression, all simultaneously, leaving skin measurably drier and slower to recover. Finally, the skin microbiome, and the biofilm it forms at the skin's surface, to varying depths, now constitutes an innovative research field combining classical biometrology with **multi-omics methods** based on in situ skin sampling.

Matching the Evaluation Method to the Claim

Few measuring devices can simultaneously quantify and visualize a hydrating effect and characterize the complexity of hydration and its mechanisms within the skin. This is why evaluation protocols for this claim often begin with in vitro or ex vivo assays to better understand the mechanisms of action of products, ingredients and active substances. Validation of the results is carried out in vivo, most often using several analytical methods. The era of multi-modality is here. So is the era of agile cross-over between vitro and vivo.

Skin hydration properties can be evaluated on a **variety of substrates**: 2D cell lines, iPS cell-derived keratinocytes, 3D spheroids or reconstructed skin models, printed or otherwise. On these models, dehydration can be simulated by adding salts or removing the culture medium, and several biomarkers allow the associated biological mechanisms to be tracked. Hyaluronic acid, a key glycosaminoglycan of the extracellular matrix, retains water and interacts with its membrane receptor CD44. Natural moisturizing factor (NMF), resulting from filaggrin degradation via caspase 14 activity, maintains skin suppleness and desquamation. Aquaporins, channels facilitating water transport across cell membranes, decrease with age and contribute to progressive dehydration. Glycosaminoglycans and ceramides/phospholipids contribute respectively to matrix water retention and to the lipid organization of the stratum corneum, while matrix metalloproteinases (MMPs) regulate remodeling of the dermal extracellular matrix. These **biomarkers are quantified through gene expression, histology, imaging or protein assays** (ELISA, Western Blot). Overall, the



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hydrating efficacy of an active ingredient is reflected in an increased density of the dermal extracellular matrix, a structural network essential for water retention and the biochemical support of skin cells.

Corneometry remains the international reference for immediate surface hydration, valued for its **speed and reproducibility**, but it probes only the outermost micrometers of the stratum corneum. Transepidermal water loss, measured by diffusion in an open or closed chamber following subject acclimatization, evaluates barrier function: its reduction reflects a reinforcement that is particularly relevant for sensitive or reactive skin. Impedance spectroscopy extends evaluation to the viable epidermis and dermis, depending on the depth targeted. Infrared and Raman technologies quantify the distribution of water and NMF non-invasively, the latter being the only method able to profile these components in situ without biopsy. Ultrasound and spectrophotometric imaging access the dermis directly to document density and collagen organization, data essential to structural claims. Confocal microscopy, complemented by LC-OCT and multiphoton tomography, finally offers real-time cellular visualization of the different skin layers.

The **choice of method depends on the claim**: corneometry for immediate

surface hydration, TEWL for barrier repair, impedance for deep hydration, ultrasound, confocal microscopy or LC-OCT for structural and well-ageing claims. But **the protocol often matters more than the device**: poorly targeted panels, environmental drift or unsuitable measurement time points account for most inconclusive results. It is therefore necessary to precisely define the claim, the population and the measurement time points, with a calibrated panel (corneometry, age), a sample size calculated by a biostatistician, a one- to two-week washout period and stable laboratory conditions.

Nomadic Diagnostic Tools, a Genuine Trend

Hydration measurement under nomadic conditions, via **connected tools and smartphones**, has so far relied on the same parameters as in laboratory settings, but could evolve toward more «medical» or «social» criteria, in line with trends driven by influencers. Laboratories will remain guarantors of objective scientific evaluation on a large scale, while AI, essential to data processing, must remain explainable and not confined to a black box. **Self-assessment questionnaires** associated with these diagnostics remain difficult to validate individually, and the management of sensitive skin health data raises major regulatory concerns, with GDPR strictly regulating Europe without

equivalent guarantees outside the EU. Raw images captured also remain the property of application developers. Two development pathways are emerging: **the adaptation of spectroscopy to smartphones, or sensors/patches measuring impedance and biomarkers** through omics approaches, with CROs playing a key validation role to prevent these tools from remaining mere gadgets.

Conclusion

Designing a hydration study protocol, whether in vitro or in vivo, requires spending sufficient time with CROs to precisely define every parameter: this time spent in dialogue is never time wasted. Although hydrating performance is among the fundamental claims of personal care products and its validation may seem straightforward, the range of protocol options is broad and the choice of methods, wide. This choice must imperatively be rigorously documented, to ensure the scientific soundness and credibility of the results obtained.

Anne Charpentier
CEO & Founder - Skinobs
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Hydration in numbers:
what the market is really
asking for

The skin hydration: from
surface to dermis

Measurement methods
state of the art and
emerging technologies

Designing a robust
hydration study in 2026



HYDRATION WHITE PAPER



04

KEYNOTES & EVENTS

Missed a key scientific event? We bring you the essentials. This section recaps the main takeaways from recent conferences and congresses, highlighting the science, the discoveries and the ideas shaping the future of cosmetics.

cosmetotest

Four Scientific Frontiers Reshaping Cosmetic Testing Lyon 2026

KEYNOTE

For its fifth edition, Cosmetotest remained true to what has made it a landmark event in dermocosmetic evaluation: two days, four sessions, and speakers presenting the latest scientific advances. Held on 18 and 19 March at the Auditorium Mérieux of ENS Lyon, the 2026 edition brought together 34 exhibitors, testing laboratories and instrument manufacturers, around 21 conferences and 20 short talks devoted to four themes: hormones, the exposome, hydration, and the skin-brain axis. Here are the highlights and the questions they raised.

Hormones: Rewriting the Rules as the Target Consumer Changes

The opening session set the tone by acknowledging a demographic shift the industry can no longer treat as a niche. Anne Sirvent (Eurofins DermScan) opened with a simple observation: one in four French women is now over 60. Her talk reviewed how clinical protocols are adapting, with the recruitment of perimenopausal and menopausal volunteers presenting specific signs, and the combination of expert scoring,

biometrology and self-assessment to capture not only visible changes but also the emotional symptoms associated with hormonal transitions.

Maya Naboulsi (Clarins) took this further with in vivo biometrological data. The results presented covered 121 women divided into four groups, from premenopause to late menopause, showing that cutaneous ageing is not necessarily linear. The perimenopausal period remains particularly poorly characterised, despite being the first phase of hormonal instability. Measurements of sebum, transepidermal water loss (TEWL), hydration and mechanical properties represent a step towards a better understanding of the cutaneous signs associated with this period.

The session also made room for hormonal biology beyond menopause. Ramón Goya (Goya Innova) showed how next-generation omics technologies, namely transcriptomics, proteomics and lipidomics, make the skin a hormonal organ that can now be read across a woman's entire lifespan. Philippe Papadimitriou (Cosystems) framed the same idea differently, describing an «endocrine epigenome» in which the rhythm of hormonal signals, rather than their level alone, determines resilience and ageing trajectories. Elodie Prestat-Marquis (Naos) addressed

Abstract

Cosmetotest marked its fifth anniversary this year, and this year edition of the symposium stayed true to what has made the event a fixture on the testing calendar: two days, four sessions, and a lineup of speakers who came to present unpublished data rather than product pitches. Held on 18-19 March at the ENS Lyon Auditorium Mérieux, the 2026 edition brought together 34 exhibiting laboratories and instrument makers and 27 speakers around four themes: hormones, the exposome, hydration, and the skin-brain axis. What follows is a walk through each session and the questions they left on the table.

hyperpigmentation as a hormonally driven condition, while Onur Egriboz (DWI Labs) presented ex vivo hair follicle cultures as a route to evaluating acne treatments without relying solely on clinical panels.

Methodology held as much ground as biology this year. Simran Sethi (Cliantha Research) detailed a trial design for acne management in Indian subjects, combining dermatological scoring, instrumental assessment and self-assessment in 92 adults over four weeks. Julie Przybylski (Pixience) highlighted the value of 2D and 3D imaging of skin and hair, presenting the C-Cube system, its colorimetric calibration and its AI-assisted analysis, as a way of preserving both the objectivity and the speed of clinical evaluation.

Exposome: from Oxidative Stress to Imaging

The second session moved from the body's internal signals to the effects of the environment on the skin. Juliette Sage (LVMH Recherche) opened with more than ten years of exposome research, covering primary cultures, reconstructed



skin and skin explants exposed to environmental stressors. Her team's work links the exposome to oxidative stress, reduced antioxidant defences and impaired mitochondrial function, as well as to a clinical study on sleep deprivation that revealed measurable changes in facial appearance after restricted sleep. The imaging component was led by Abdel Aouacheria (CNRS), who described the entry of cellular imaging into an era of large-scale data processing. His team has developed two tools: Mitomatique, which generates computational mitograms to assess mitochondrial health and characterise the combinatorial effects of the exposome, and Noxiscore, an assay based on digital histometry of human skin biopsies, designed to quantify the toxicological impact of combined product use, with sun protection and mosquito repellent among the examples cited. Several short talks broadened the scope of the session: Oliwia Kalinowska (JS Hamilton) on substantiating hair and scalp protection claims against exposome-related damage, Salvatore Del Prete (Service Biotech) on monitoring metal contaminants in the hair matrix, approached as a safety assessment question rather than a purely cosmetic one, and Edouard Macé (Eotech) on interferometric microscopy applied to measuring thermal stress on hair surface condition.

Hydration: the Golden Claim at the Crossroads of Multiple Innovations

The morning opened with practical, instrument-level talks: Hassan Zahouani (LTDS) on the mechanical properties of subcutaneous layers, Lieve Declercq (Proya Cosmetics) on barrier restoration strategies, and Pedro Contreiras (PhD Trials) proposing a mathematical model of intrinsic water-retention capacity based on TEWL and hydration data. Margot Vasseur (Damae Medical) presented 3D LC-OCT biomarkers for hydration and barrier function, while Marc Bruzzzone, speaking on behalf of Diana Khazaka (Courage & Khazaka), reported results from a Bluetooth-enabled Corneometer evaluated under real-life home-use conditions. Stéphanie Badel-Berchoux (Byome Labs) brought a microbiome perspective rarely paired with hydration talks, showing

how monitoring the skin microbiota can inform and strengthen hydration strategies, a useful reminder that the barrier is a living ecosystem rather than a simple physical layer.

The session closed with a roundtable, «Evaluating the golden claim of hydration: the new scientific challenges of quantifying skin hydration.» Georgios Stamatas (SGS), Tim Houser (Dermico/Cortex), Aline Rigal-Dachaud (Clarins) and Raoul Vyumvuhore (Proya Cosmetics) joined Anne Charpentier to discuss what amounts to a genuine paradigm shift. Corneometry and TEWL have been the reference methods for decades, reliable but limited to a static, surface-level reading. The panellists pointed to in vivo Raman spectroscopy for depth-resolved water mapping, OCT and LC-OCT for real-time structural visualisation, and wearable biosensors feeding AI models for real-world monitoring.

Skin and Brain: Neurocosmetics at the Heart of Innovation

The closing session drew together a theme that has been building across several editions of Cosmetotest: the skin as a neuro-immuno-endocrine organ rather than a simple barrier. Dr Haykal opened with a broad framing of neurocosmetics, an approach targeting cutaneous nerves, neuromediators and sensory receptors in order to influence both skin function and emotional state. The skin, she recalled, produces serotonin, dopamine and beta-endorphins, and recent data increasingly implicate the gut-skin-brain axis and the skin microbiota in mood and neuroinflammation.

This connection was explored from several angles. Edith Filaire (Icare Group) presented a psychophysiological framework for the gut-skin-brain axis designed specifically for cosmetic research. Eloïse Appelmans Gerardin (Brain Impact Neuroscience) shared functional MRI data showing that the sensation following cosmetic application activates sensory and reward networks. Arthur Derville (Loretta) used nanoscale AFM biomarkers to track cutaneous stress responses during examination periods, a real-world stressor cleverly chosen for a study in students. Clément Milet (CTI Biotech) then presented a



computer-connected «artificial neural skin» designed to evaluate in real time how a fragrance or cosmetic feels. Axel de Marles (Senseva) closed the scientific talks with a methodology for predicting consumer behaviour from the affective trace of product experience. Marta Ferreira (Inovapotek) and Mathilde de Torsiac (Sisley) each presented multidimensional frameworks for assessing stress, sleep and well-being in clinical research, while Magalie Cabannes (Greentech) concluded with a specific active, an aspalathin-rich extract positioned as a peripheral modulator of the skin-brain-hormonal axis for men's anti-ageing skincare, a useful reminder that the science of this session is already reaching formulation.

Closing the Loop: Claims still Need Evidence

In closing, Anne Charpentier (Skinobs) devoted her talk to science-based claims in dermocosmetics. Her argument: as evaluation methods multiply, the challenge is no longer to generate more data but to connect it to defensible claims. She presented Cosmetotest as a space where brands, dermatologists and testing laboratories compare their views on what constitutes proof. This tension between the widening of scientific possibility and the rigour required for substantiation ran through all four sessions.

Anne Charpentier

Rencontres Maquill'ÂgeS Paris 2026



KEYNOTE

Held in Paris on 4 June, the SFC Rencontres «Maquill'ÂgeS» brought together historians, brands, ingredient suppliers, regulatory experts and evaluation specialists around four themes: history and trends, formulation, regulation, and testing. The title combines **colour and anti-ageing, addresses every generation**, and calls for moving beyond overclaiming and prescriptive norms towards inclusive beauty.

Maquill'ÂgeS: from Ritual to Evidence

Historian Laure Nicaise opened the day with Egyptian kohl, a funerary offering that was at once aesthetic, antibacterial and ritual, and a symbol of the Eye of Horus. Hélène de Clermont Gallierande (Chanel) showed that **facial contrast decreases with age** across all ethnic groups. Restoring it on the lips and eyes rejuvenates the face and enhances self confidence. For Philippe Msika (Makilab Innovation), make up is a social and emotional signal with measurable effects on stress and self esteem.

Mara Imberti (Skinlys) identified three trends: **multifunctional skinification, haptic make up and comforting nostalgia**. Grolman explored alternatives to carmine, talc, mica and titanium dioxide, Le Rouge Français presented plant derived colours, and Susonity unveiled its Color Forecast 2028. In formulation, sensoriality and naturalness are now essential, with no compromise on performance: Yves Rocher, Anjac and Gattefossé brought skincare and colour closer together.

Raw material substitution is gaining ground: European mica extracted from granite (Imerys), a gardenia blue converted into a natural pigment (Sensient), and natural emulsifiers benchmarked against silicone based ones (Evonik). Camille Bassier (Inside Cosmetics) highlighted ingredients under regulatory scrutiny (silica, talc, titanium dioxide), the need for **rigorous claims and visuals, and vigilance regarding influencers**, the French AGEC anti waste law and products for young consumers.

Evaluating Make Up to Skincare Standards

The testing session made it clear: **make up evaluation now meets the standards of skincare**. L'Oréal (Jérôme Bonnard) assesses the cohesion and adhesion of deposits in vitro through tensile, friction and peel tests. The FLAME robot, **the «kiss» transfer test** and a study of shade impact on wear complete the approach, supported by a data repository leveraged by AI for predictive purposes.

Dow (Ingrid Vervier) reconciles **shine and long wear** using an in vitro method on rough VitroSkin substrate, combining SAMBA and glossmeter measurements. Stéarinerie Dubois (Fabien Merlaud) demonstrated how the structure of sensory functional esters governs pigment dispersion, spreadability, gloss and colorimetry.

Microfactory (Fabrice Monti) reviewed **in vitro and in vivo models and highlighted the value of dynamic synthetic skins** for generating large, reproducible datasets. In the absence of a shared coverage threshold, SP Equation (Erika Davin Mariotti) proposed a robotised spectroradiometric method.

Finally, Skinobs and Cos&Co (Anne Charpentier and Pascale Barlier) asked: **«Wear, colour, radiance, what else?»** Their overview of current trends and evaluation technologies makes the case for hybrid, skincare inspired protocols able to characterise products that have become multifunctional.

Four Key Signals

1. Skincare benefits have become inseparable from make up.
2. Sensory experience is central to how performance is perceived.
3. Texture sensoriality and formula naturalness are confirmed requirements.
4. Objectivation methods now make it possible to confirm efficacy.

Creativity, sustainability, raw material substitution, inclusivity, AI and data science, safety and compliance: these are the keywords that will drive tomorrow's innovation. As Wassily Kandinsky wrote, **«Colour is a power which directly influences the soul.»**

Anne Charpentier



Beauté Sous Tension

Paris 2026



KEYNOTE

Facing geopolitical, geo-economic, geoclimatic and geotechnological tensions, the cosmetics industry must adapt constantly, and ever more quickly, without losing sight of its ultimate goal: delivering a cosmetic product that is both safe and effective, while meeting consumers' needs and expectations. These expectations are complex, even contradictory: consumers want reassurance about product quality through science, figures and robust evidence of efficacy and safety, yet they also want a more hedonistic, ritualised approach built around an emotional experience. Products and the studies that support them must therefore be able to sustain



both dimensions: functional performance and emotional efficacy.

Appearance and well-being are now inseparable, and it has become strategically important for brands to take this into account.

On the functional performance side, the promise of longevity, now a must-have, spans all age groups and applies in particular to under-30s (nine out of ten young French women rank longevity as a priority). Google searches on the topic rose by 25% between 2024 and 2025, and skin is increasingly regarded as one of the most visible indicators of longevity and, more broadly, of good health.

Younger consumers are taking a more active role in managing their own health and want access to data that allows them to choose their products and take charge of their health.

Efficacy studies must therefore focus not only on evaluating the correction of visible signs of ageing or skin disorders, but also on demonstrating the preventive role of cosmetics in skin health, by exploring new indicators that are not yet visible on the surface but can still be acted upon. The concept of longevity now applies to every area of the body, and so to every product category: skincare, haircare, make-up, nail care and beyond.

Emotional efficacy is an essential dimension to evaluate, as it underpins consumer loyalty to a given brand. Long supported by perception alone, it can now be measured using tools that have become more accessible: neuroscience studies, increasingly present in cosmetics, alongside more conventional sensory analysis and consumer testing, both likewise geared towards emotional perception. In this respect, spa and salon treatments, built on touch and on C-tactile fibre stimulation, remain unmatched when it comes to the well-being dimension.

W

New technologies are also coming into play, serving both formulator and consumer alike. For the formulator, this means integrating new assistants, «scientific co-pilots» powered by AI tools that predict stability, safety and efficacy through knowledge modelling and the creation of predictive algorithms, or through the creation of a «digital twin» of hair or skin to test new molecules in silico.

Consumers, too, now have access to technological tools, whether to boost a cosmetic product's efficacy through



LED, microneedling or radiofrequency technologies, or to obtain an in-depth skin diagnosis with the promise of access to a perfectly tailored, personalised product. This highly personalised skin-diagnosis experience is also a way of bringing consumers back into store, combining measurement with listening before recommending a product.

These diagnostic tools, inspired by laboratory instruments, are becoming increasingly sophisticated in order to make product recommendations more reliable. In store, online, or during laboratory efficacy studies, measurement tools are increasingly being paired with biomarker assays and multi-omics approaches of varying complexity, but with considerable promise.



Against this backdrop of global tension and intensifying competition, building brand credibility and developing a high-performing, distinctive cosmetic product calls for ever more science, both to understand skin, hair and other appendages, and to assess the sensory, emotional and functional impact of cosmetic products.

Consumer trust also depends on brands being transparent, not only in communicating traceability information but also in providing solid scientific evidence, made accessible through tools such as a digital passport that would add tangible value to the product.

Pascale Barlier
CEO & Founder
Cos&Co

ISBS Congress

The skin, from surface to depth

Lyon 2026



KEYNOTE

From 10 to 12 June 2026, the École Centrale de Lyon hosted the 50th World Congress of the International Society for Biophysics and Imaging of the Skin, chaired by Prof. Hassan Zahouani. Its theme, «Surface and Beneath Skin's Secrets: Quantitative Imaging and Sensing», set out the ambition of these three days: to characterise the skin from its surface to its deepest layers using quantitative and visual methods. One key message emerged across sessions: multimodality. No single method is sufficient any longer; the challenge now lies in combining imaging, spectroscopy, biomechanics and perception, and then modelling the whole.

An Opening Workshop Dedicated to Imaging

The congress opened on Wednesday with a satellite workshop co-organised with the Imaging Working Group of the French Society of Dermatology. LC-OCT was at the centre of discussions, set against neighbouring techniques,

each with its own trade-offs: in ultrasound, the resolution gained by increasing frequency comes at the cost of penetration depth; reflectance confocal microscopy remains the reference for cellular resolution; LC-OCT is gaining ground in study protocols, although still held back by its cost. The Saint-Étienne team linked surface and subsurface by co-localising dermoscopy, super-high magnification dermoscopy and LC-OCT, while one presentation introduced AI-based automated PASI scoring in psoriasis and another described facial skin microstructure across age groups using LC-OCT.

Hassan Zahouani transposed to the skin the concept of tensegrity, borrowed from architecture: a surface network connected to the underlying layers and the superficial fascia, whose loss with age can be objectified by a tension index coupled with imaging. For LVMH, Missodey opened the discussion on diversity by analysing the architecture of the dermal fibrous network across diverse populations using deep learning.

Measuring Differently: AI, Wearable Sensors and an Electronic Nose

The Thursday morning session, chaired by Joachim Fluhr, began with the keynote by Xavier Descombes (INRIA), a review of fifteen years of skin image analysis, from melasma segmentation to non-invasive pre-diagnosis. Measurement then moved beyond the laboratory: Clarins calibrates a smartphone to recommend a foundation shade as a professional make-up artist would; the Lyon Institute of Nanotechnology monitors nocturnal skin hydration with a connected bioimpedance probe; Chanel and Newtonone combine a hydration probe with cross- and parallel-polarised colour imaging, benchmarked against the Corneometer.

Abstract

From 10 to 12 June 2026, the École Centrale de Lyon hosted the 50th World Congress of the ISBS, chaired by Prof. Hassan Zahouani. A dermatological imaging workshop, organised with the French Society of Dermatology, was followed by four sessions exploring the skin from its surface to its deepest layers. The programme brought together highly diverse approaches: the concept of tensegrity applied to the skin, the role of subcutaneous anchoring structures in facial sagging, an artificial nose able to detect the chemical signature of basal cell carcinomas, and mapping of the microvasculature by optoacoustic mesoscopy. The keynotes by Xavier Descombes and Joachim Fluhr highlighted the place of image analysis and Raman spectroscopy. The final day brought science closer to the product, focusing on the skin barrier, sunscreens and infant skin, with the L'Oréal and Stanford study on post-cleansing tightness as a highlight.



More unexpected was the artificial nose presented by the Saint-Étienne team: in 90 patients with basal cell carcinoma, volatile organic compound signatures specific to the tumour were identified, paving the way for an electronic nose. This message echoed that of the round table on AI in melanoma screening: trust will be built through multicentre studies and through AI acting as a second reader integrated into routine practice, never through replacing the physician.

Skin Sagging Deconstructed

Chaired by Bernard Querleux, the biomechanics session opened with the keynote by Santoprete: neither the dermis



nor the hypodermis alone accounts for facial sagging; subcutaneous anchoring structures play a decisive role, and the mechanisms act synergistically. Ezure extended this view with the «ring collagen», a tensional network that maintains facial morphology, visualised in 4D; another study measured the effect of shear wave stimulation on facial skin tension and elasticity. At the nanoscale, the University of Toronto established the multiscale anisotropy of dermal collagen, observed by atomic force microscopy, as a marker of ageing and disease, including Ehlers-Danlos syndrome.

Instrumentation, meanwhile, is diversifying. The CNRS Impact-Based Analysis Method (IBAM) characterises the skin mechanically by impact, non-invasively and at low cost, with an axial resolution approximately twenty times higher than that of the Cutometer or MyotonPro. Joachim Fluhr proposed a new ageing parameter, the «Maximum Collagen Power», and Sisley assessed the tension line index in very mature skin using the Adhelaskin device. On diversity, LVMH compared age-related changes in biomechanical properties in around one hundred women of Caucasian, Asian and African American origin: the earliest decline occurs in Caucasian skin and the most moderate in African skin, suggesting a protective role of higher pigmentation. Chanel, for its part, combined suction, ballistometry and indentation to track these changes across decades.

Touch Becomes Measurable

The final topic of the day was touch. Gustavo Luengo (L'Oréal) linked tribology, perception and mechanoreceptors, each responding to its own frequency range. A tactile acuity index now quantifies texture

discrimination, and the TouchyFinger device provides an objective assessment of cutaneous mechanosensing: women perceive more, and sensitivity declines with age.

High-Resolution Imaging, augmented by AI

On Friday morning, under the chairmanship of Georgios Stamatas, the keynote on optoacoustic mesoscopy showed how to map the skin microvasculature, from large vessels to capillary loops, by successively targeting melanin, lipids or water. Generative AI creates synthetic polarisation contrast in OCT, deep learning automatically classifies skin layers in two-photon microscopy images, and virtual H&E staining now reaches nuclear-level detail. In Korea, AI-driven analysis reveals region-specific facial ageing patterns. Two presentations focused on sunscreens: LC-OCT quantifies the 3D homogeneity of their films, while multiphoton microscopy relates particle distribution to optical performance.

From Physiological Knowledge to Product Evaluation

The final session, chaired by Hassan Zahouani, brought fundamental science back to the product. A highlight was the study by Anne Potter (L'Oréal, with Stanford University) on post-cleansing tightness: by linking stratum corneum drying stress to modelled mechanoreceptor activation, it establishes this sensation as a quantifiable biomechanical event. Harsh surfactants disrupt lipid organisation, increase water loss by approximately 47% and drying stress by approximately 130%; mild surfactants limit these effects.

The skin barrier featured prominently. Tape stripping remains a cornerstone of study design, about ten consecutive strips being sufficient to double transepidermal water loss. LVMH monitors barrier repair layer by layer by combining 3D LC-OCT and confocal Raman spectroscopy; proDERM assesses barrier integrity through caffeine penetration; P&K Skin Research Center tracks recovery

from SLS-induced damage over seven days, with OCT at the forefront. These were complemented by locally resolved capacitance imaging of barrier function, the effect of fragrances on skin lipids studied with Coty, and the influence of skin temperature on UV filter performance, which calls for testing under realistic conditions. Standardised remote photography, for its part, objectifies the effect of a good or bad night on facial skin. Finally, three presentations were devoted to infant skin: its maturation as seen through transcriptomics, its vulnerability to allergen penetration, and the preservation of its microbiome with an acidic emollient.

Key Takeaways

ISBS 2026 confirms a paradigm shift. Artificial intelligence now spans every discipline, from diagnosis to product recommendation. LC-OCT is establishing itself as a core technique, almost always combined with another modality. Properties long described qualitatively, such as tension, touch and mechanosensing, are now entering the realm of measurement. Skin diversity is being built into study protocols, and measurement is moving closer to real-life settings and the home. Value no longer lies in an isolated instrument but in the reasoned combination of methods: for teams designing protocols, an invitation to view evaluation as a coherent whole, from physical signal to consumer perception. One message stands out: no single method is sufficient; value lies in their combination.

Anne Charpentier,
CEO & Founder, Skinobs



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Asian Beauty A Market led by skincare & ancestral ingredients

Four Trends Shaping Asia Beauty Market

1. Skin barrier and microbiome. Postbiotic blends and formulas targeting lipid balance are becoming the norm, all the more so as actives with well-substantiated properties reach the market. The new expectation is what experts call «barrier-safe potency»: the expected efficacy results without compromising tolerance. This is also why the skin microbiome dossier in this issue extends well beyond the European context.

2. Biotech actives and skin longevity. The focus is shifting from anti-ageing towards long-term skin resilience, a major theme of in-cosmetics Asia 2026. Recombinant growth factors, precision ferments, peptides, PDRN and exosomes are the new star ingredients.

3. K-beauty 2.0 and J-beauty. K-beauty, whose influence continues to grow worldwide, is moving from trend to benchmark. Its next phase will be even more firmly grounded in science and AI, with ingredients targeting the skin barrier and drawn from dermocosmetics. J-beauty adds an emphasis on long-term skin health and sensory experience.

4. Evidence as the standard. Multi-step routines, messaging that equates irritation with efficacy and fear-based «clean» positioning are losing ground. Consumers demand transparency, expect clinical and biometrological substantiation of product promises, and look for scientifically demonstrated results. Personalisation through AI-based diagnostic tools is moving from novelty to established trend, and its credibility will only ever match that of the data behind it.



What does this means for Testing

Each of these trends raises a question that only a study can answer. Does a sunscreen protect under real conditions of use? Is a postbiotic well tolerated by sensitive skin? Does a longevity active deliver visible results over time? The more demanding the claim, the more specific the method must be, and the more valuable it becomes to choose a laboratory familiar with the local population.

This is precisely the conversation we wish to open in Bangkok. in-cosmetics Asia will take place from 3 to 5 November 2026 at BITEC, with more than 770 exhibitors expected, around 10% more than in 2025. Come and meet the Skinobs team to discuss your target markets and the tests capable of substantiating your claims.

Discover their expertise at in-cosmetics Asia, booth AA33





The Beauty Market: focus on Thailand A skincare-led Market, Online and in Store

Thailand's beauty and personal care market is projected to exceed USD 7.1 billion by the end of 2025, with expected annual growth of around 4.6% through to 2030. Skincare accounts for nearly half of the market value, well ahead of make-

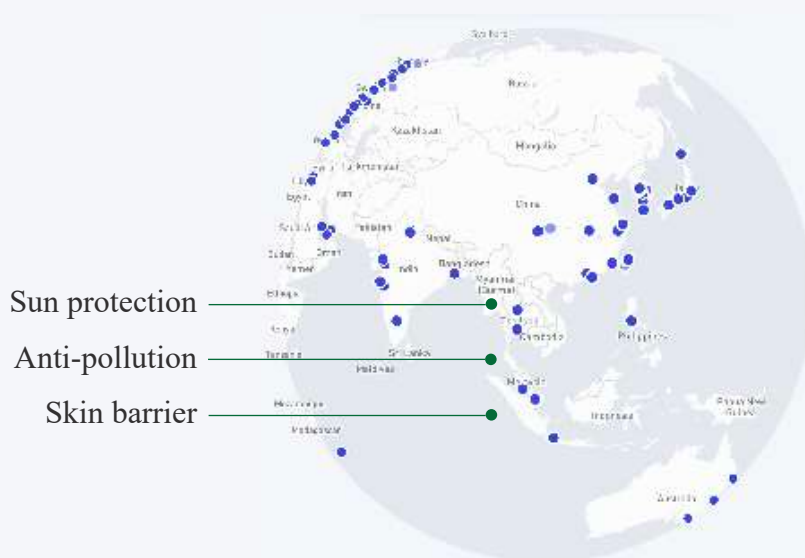
up at around 20%. Purchasing habits are divided: almost half of beauty purchases are made online, yet physical retail, convenience stores included, continues to attract far greater footfall.

Thai consumers' concerns are distinctive. Hyperpigmentation, sensitivity, acne and an impaired skin barrier are cited most frequently, with acne particularly prevalent among Gen Z and Millennials. Search behaviour reflects this. In 2024, searches for salicylic acid rose by more than 65% on Thai e-commerce platforms, and those for Centella asiatica by 48%. According to Mintel, 72% of Thai Gen Z consumers attach great importance to proactive measures aimed at preserving the future appearance of their skin. Prevention is thus becoming a purchase driver. From a regulatory standpoint, Thailand operates a notification system under the Cosmetics Act of 2015 and its 2022 amendment, rather than requiring pre-market approval. In practice, the onus is on brands to hold the evidence **substantiating their claims**.

42% of the region's market for China alone (USD 68.0 billion), followed by Japan (USD 30.5 billion), South Korea (USD 17.8 billion)

+20% growth of online beauty sales in 2025, although offline channels still represent 60.1% of the market

32% share held by the five leading groups (Shiseido, Amorepacific, Kao, LG Household & Health Care and Shanghai Jahwa)



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15-16 February, 2027



India: A Beauty Market in Full Transformation, Between Science and Tradition

India stands out as one of the most dynamic beauty markets in the world, growing at 9% annually. Already valued at USD 21.5 billion in 2025 and accounting for 3 to 5% of the global market in 2024, it is the fastest-growing region in Asia-Pacific, with a target of USD 61.5 billion by 2030. This momentum rests on an extraordinary population base of over 1.48 billion inhabitants (Worldometer, August 2026), a young demographic undergoing rapid urbanisation (37% versus 81% in France), and increasingly connected consumers: 70% of Indian consumers are active on social media, which heavily shapes usage patterns through influencers, Bollywood culture, and celebrity endorsement.

A «Quiet» Yet Demanding Beauty

The Indian market is moving toward what could be called «Quiet Beauty»: a demand for sophisticated simplicity that supersedes overloaded routines. Consumers are seeking simple yet high-performing products, with heightened attention to ingredient quality, proven efficacy, and transparency. Brands are now expected to justify product value through science, functionality, and clearly demonstrated benefits rather than through promise alone.

This demand coexists with a strong premiumisation trend: despite economic pressure, inflation, and rising raw material costs, Indian consumers are investing more in premium formulations, targeted treatments, and innovative formats, driven by omnichannel strategies combining online and in-store sales.

Wellbeing at the Heart of Beauty: From Ayurveda to Neuroglow

Another strong signal: beauty is increasingly connected to emotional health. The Neuroglow trend illustrates this shift, with products claiming benefits that go beyond appearance, relaxation, mood, and holistic wellbeing.

This dynamic finds particularly fertile ground in India, owing to the longstanding cultural acceptance of mind-body balance and the traditional use of Ayurvedic wellness ingredients. This same logic underlies the emerging rise of neurocosmetics and the skin-brain axis, where the evaluation of emotional wellbeing now combines physiological, psychological, and behavioural measures.

Skin Specificities Shaping Testing Demand

The subcontinent presents considerable phototype diversity, with a pigmentation gradient that broadly follows a southwest-to-northeast axis, darker skin tones concentrated in the south and east of the country. This heterogeneity translates into a high prevalence of pigmentary disorders: 20 to 30% of women aged 40 to 65 present facial melasma, half of Indian women show moderate to severe dark circles, and 80% of the population displays facial skin colour heterogeneity, irrespective of age or sex. Darker skin tones are also more susceptible to pigmentary disorders, which are exacerbated by UV exposure.

This physiological reality explains the considerable economic weight of the skin-lightening market in India, with annual sales of lightening creams and soaps estimated at USD 4 billion, accounting for 60% of skincare product sales. It also explains why fine-grained characterisation of pigmentation, through the measurement of melanins, their transfer, and their composition between eumelanin and pheomelanin, occupies a central place in testing protocols designed for this market.





Testing Ecosystem Taking Shape

To meet these specific needs, laboratories such as CIDP or NovoBliss Research, are drawing on a wide range of technologies: colorimetry and skin colour tracking, 3D imaging of texture and complexion, overall facial analysis, and skin surface and gloss analysis, offered by numerous instrumentation providers including C+K, Miravex, Cortex, Orion Technolab, Pixience, Eotech, and MedX Health, among others.

On the Skinobs platform alone, the offering dedicated to India already comprises 251 clinical solutions from 15

providers, drawing on 132 devices and methods, complemented by 71 preclinical solutions from 10 providers.

A Regulatory and Technological Landscape in Motion

The market nonetheless remains marked by structural constraints: a regulatory framework aligned with BIS standards and European reference frameworks, but still unclear policies on issues such as animal testing, a strong dependence on imported technologies, and high R&D costs. This context, however, is part of a broader transformation of the sector, marked by the growing medicalisation of skincare, the rise of skin microbiome research as a new lever for barrier efficacy, personalisation driven by artificial intelligence and DNA/microbiome profiling, and the arrival of new ISO standards for SPF testing, exemplified by the fully in vitro DPM method (ISO 2375). This momentum is already translating into major industrial investment: L'Oréal has announced the creation, in Hyderabad, of a global technology hub dedicated to artificial intelligence, backed by €350 million over five years. This centre, expected to generate around 2,000 highly skilled jobs, confirms India's positioning as a strategic innovation hub for the global cosmetics industry.

India is thus asserting itself as a fully-fledged ecosystem for the cosmetics industry: a market where Ayurvedic tradition, Western scientific rigour, and technological innovation converge to redefine the standards of proof and efficacy.

+39% growth in e-commerce and quick-commerce sales in 2024

42% market share for organic and natural products

35% of the market for skincare and sun care, the leading segment, driven by pollution and UV exposure



Testing in India on skinobs.com

For Preclinical Assays

- 73 solutions
- 67 study parameters
- 10 services providers
- 21 study subjects

For Clinical Evaluation

- 261 solutions
- 199 claims
- 13 services providers
- 31 device manufacturers

Skinobs Youtube Channel: the News of the Testing Industry, all in One Place

Skinobs, the testing sourcing hub for beauty, is putting the spotlight on its YouTube channel, where the replays of its webinars on cosmetic testing and claim substantiation are available to everyone, at any time.

Two webinar formats are now available on the channel. For three years, Skinobs has run post-show webinars shortly after major trade shows. They share the testing trends and market insights spotted on the ground, for example Testing Trends from in-cosmetics Asia in November 2025 and Testing Trends from India in February

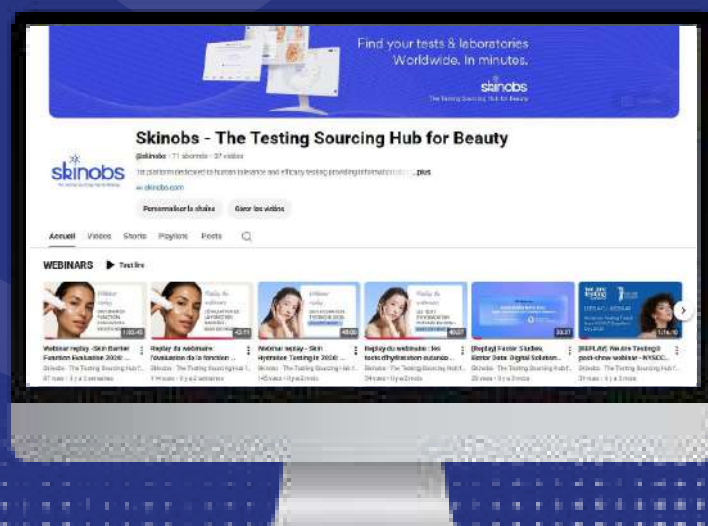
2026. This year, Skinobs added a monthly thematic series, each session dedicated to one subject that matters to brands, formulators and testing laboratories: hydration on 30 June, skin barrier on 27 August, skin microbiome on 29 October and sun care on 10 December. Each session presents the evaluation methods available, the trends behind them and the way they translate into claims.

The next thematic webinar, «Skin Microbiome: An Overview of Evaluation Solutions», takes place on 29 October 2026 in English and French. The

microbiome is the third most requested research topic on the Skinobs platform in 2026.

« Our webinars are meant to give testing professionals a clear view of which test supports which claim, and of what is moving in each market. YouTube lets them come back to it whenever they need.»

Anne Charpentier, CEO and Founder, Skinobs



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Upcoming events

Meet the team around the world in 2026 and 2027, to exchange about your preclinical and clinical testing projects.

in-cosmetics™ asia 2026
November 3-5

hpci INDIA 2027
February 15-16

in-cosmetics® global 2027
April 6-8

cosmetotest 2027
June 2-3

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International *Symposium* dedicated to Clinical & Preclinical Testing

LYON - ONLINE

2-3 JUNE 2027

SESSIONS

The biological clock of skin, scalp
and hair: light, time and
regeneration

Compromised & sensitive skin:
beyond the barrier

The art of makeup: sensory
experience, protection & care

Biomarkers as skin storytellers :
performances mapping across
every layers

