

SCC78

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Speaker Abstracts

Session D: Hair & Scalp Health



Improve Sensitive Scalp of Textured Hair People with Artificial Intelligence

Philip Ludwig

BASF Corporation

ABSTRACT

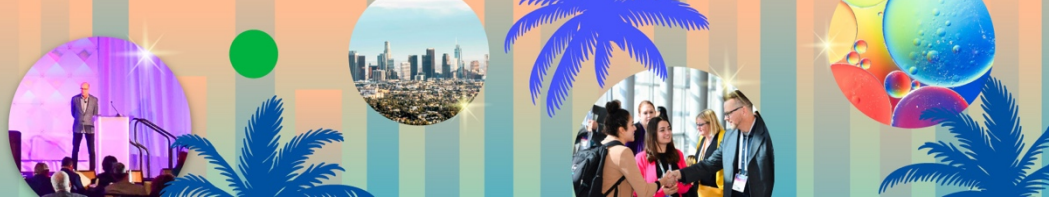
Sensitive scalp is a global growing concern, also affecting women with textured hair. Those women have hairs and scalp prone to dryness with scalp sensitivity symptoms. Due to limited research on textured scalp hair concerns, we aimed to find a suitable scalp care product for concerned people.

Combining predictions of machine learning with in-vitro tests, we evaluate trillions of peptides. After several data entries, a predicted architecture was built via deep learning models to identify and unlock anti-inflammatory peptides from rice protein.

In-vitro assays showed that the peptides inhibit TNF- α release from macrophages. Under TNF stress, the unlocked peptide solution increased filaggrin in reconstructed epidermis.

In vivo, it significantly reduces symptoms linked to sensitive scalp (redness) vs placebo and significantly improves scalp hydration (vs D0).

This study allows to discover a new generation of natural plant-based peptides that fulfill the consumer needs of multi-ethnic beauty products with scientifically proven claims.



Understanding the Effects of Imbalance in Common Scalp Disorders

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ABSTRACT

As a new, trendy category, it is important to understand consumers' attitudes and expectations regarding scalp care. By doing so, we discovered that scalp care is becoming a wellness focus with 93% of consumers already taking care of their scalp as an essential part of their beauty routine. Scalp health is above all a question of comfort, well-being and self-confidence. Apart from understanding the need for solutions, it is equally imperative to investigate the origin of the irritation.

This presentation is a deep dive into the understanding of scalp specificities and the imbalance at the origin of scalp disorders. Looking closely at the bacteriome as well as the mycobiome, we take an in depth look at how the imbalance of the scalp microbiome affects the overall health of the scalp, the role that sebum plays in scalp discomfort and common scalp disorders such as dandruff, seborrheic eczema , atopic scalp and general irritation.



Unveiling Ultrafine Structure of Hair Surface by Quantitative Nanomechanical Property Mapping

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ABSTRACT

This study utilized Atomic Force Microscopy (AFM) in conjunction with PeakForce Quantitative NanoMechanics (QNM) mapping to investigate the nanoscale mechanical properties of the hair surface. High resolution images of modulus, adhesion, and energy dissipation were captured, enabling an examination of the ultrafine structures across different zones of the hair cuticle. A unique nano-domain structures were discovered based on nanomechanical properties: soft hydrophobic domains with low modulus are interconnected by more rigid hydrophilic boundaries with high modulus. Furthermore, a comparative analysis of virgin, bleached, and UV-irradiated hair samples revealed various forms of nanoscale damage in cuticle regions. These findings significantly advance the understanding of the ultrafine structural integrity of hair surfaces, particularly in relation to the effects of environmental and chemical treatments at the nanoscale.