



METABOLON®

About the Company

Founded in 2000 and headquartered in the USA, Metabolon, Inc. is a leading global life sciences company with platform installations in Europe and Asia. Its metabolomics-focused contract research services have been embraced by companies in the pharmaceutical, biotechnology, consumer products, agricultural, pet care and nutrition industries, as well as government and academic institutions.

Metabolon's pioneering work to comprehensively mine the metabolome to understand biochemical pathways and effects has led it to biomarker discoveries, the development of innovative diagnostic tests and new opportunities in personalized medicine.

Harnessing the Power of Metabolomics

Metabolon is an innovator and industry leader in the field of metabolomics, or the systematic measurement of small molecules (metabolites) within a given sample. These metabolites have the potential to provide important insight into systems biology and advance research and product development across a variety of areas.



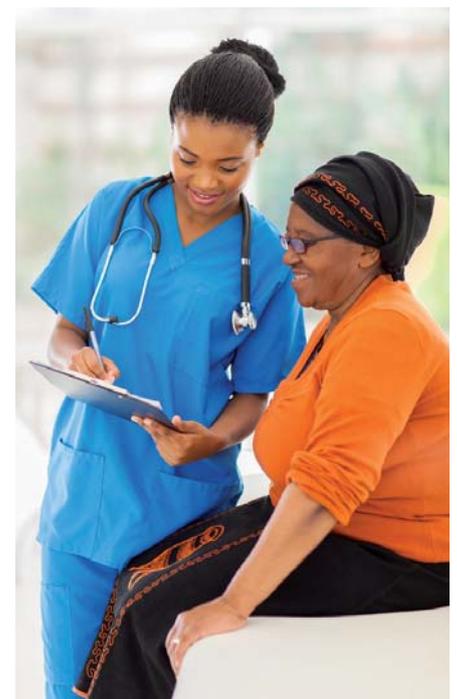
Metabolites are central to the physiological state of a living system, and they are both the cause and byproducts of cellular changes related to the environment, microbiome or gene function. Thus, metabolomics can help complete the picture in systems biology, offering insight into biological phenomena that cannot be fully explained by the genome, transcriptome or microbiome. Metabolon clients use this crucial understanding to advance research in both medicine and commercial product development.

Metabolon is renowned for its powerful and proprietary profiling technology, which enables truly transformative results in life science applications. Metabolon scientists use robust gas and liquid chromatography in conjunction with mass spectrometry, followed by sophisticated data analysis techniques to deconstruct the chemical fingerprints left by cellular processes. This streamlined process, backed by a 14,000+ chemical reference library, uses sophisticated informatics to rapidly and accurately identify all the small molecules in a sample based on mass, retention time and peaks.

Metabolon has conducted more than 3,000 client studies that have delivered unprecedented knowledge of complex biological processes for its clients. The company's leadership in metabolomics is evidenced by the nearly 400 publications that Metabolon and its clients have authored to date.

Skin Deep: The Utility of Metabolomics in Cosmetic Research

Leading skincare researchers agree that metabolomics is an important functional tool for the cosmetic industry. As a field of inquiry, metabolomics has yielded new and important insights into skin structure and processes, its response to injury and age, and the mechanisms by which new therapies and personal care products can improve skin health.





Metabolites are key indicators of health and disease, and can be created and dramatically influenced by genetics, environmental factors and localized skin microbiota. Metabolites are also extremely sensitive, and metabolic perturbations often present much earlier than either tissue accumulation of toxins or induced histopathologic changes. Therefore, a metabolite assessment of skin tissues is an excellent way to elucidate the biochemical changes associated with damage to the skin barrier.

For example, cellular damage and aging have been associated with changes in amino acid, lipid, and energy metabolites across multiple skin layers. Understanding these metabolic changes can be extremely useful in the development and validation of sun care and anti-aging products, as well as treatments for skin conditions such as acne, eczema, and psoriasis.

Applying Metabolomics to Skin Research

Broad metabolomic investigation has provided skin researchers with the ability to assess changes in the abundance of large numbers of metabolites (1000s) across more than 60 compound classes. This allows skin-care researchers to investigate the holistic impacts of their formulas and bioactive ingredients.

Focused metabolomic approaches, on the other hand, can target a specific class or

classes of metabolites in order to help researchers and product developers understand pathway regulation and to validate biomarkers. Such biomarkers may be useful for tracking the progression of skin conditions and monitor the effectiveness of therapeutic interventions.

The benefits of metabolomics span over many areas and include:

Product Development

- Reduce development time and improve product efficacy by elucidating metabolic targets of various skin conditions
- Drive clinical innovation via predictive objective endpoints (biomarkers)

Drug/Ingredient Development

- Clarify mechanism of action
- Enhance patient stratification
- Improve biomarker identification
- Advance R&D pipeline in therapeutic areas such as acne, psoriasis and atopic dermatitis and

Basic Research

- Discover metabolic profiles across a wide variety of skin conditions
- Interrogate the role of microbiome

Metabolon's Skin Research

Metabolon's high-throughput discovery and focused metabolite profiling have had profound impacts in a variety of skin research programs. The company continues to ex-



pand its expertise in skin research by developing new, focused metabolic panels ideally suited to investigate various skin layers and aspects including sebum, stratum corneum, skin biopsy, cell culture and reconstructed skin models.

The company offers skincare a wide range of scalable service offerings, and a team of Ph.D. scientists provide support from design through data interpretation to ensure the success of every study.

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