

## **Largest skin lipidomics study provides a basis for personalized cosmetics**

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**The largest lipidomics study to date analyzing skin lipids in more than 250 skin samples has been published in “Scientific Reports” (Sadowski T. et al. 2017, doi: 10.1038/srep43761). The study applied a novel Skin Lipidomics Technology Platform developed by Lipotype GmbH, a German Max-Planck-Institute spin-off. Results showed that the skin lipidome varies with respect to depth, site, age and subject. This variation seems to be driven, mainly by secretion of sebaceous lipids and this finding could have an intriguing impact on the design of cosmetic products. Results also reveal a high inter-individual variation of the lipid profile of each person, which could become the basis for the development of personalized cosmetics.**

### **High-throughput skin lipidomics with ultra-broad fully quantitative coverage**

Until recently, investigating skin lipidomes was not a trivial task. On one hand, the analytical method needs to have coverage broad enough to encompass the variety of skin lipids, and a throughput allowing for statistically relevant studies. On the other hand the method should be compatible with a convenient sampling technique such as tape stripping. These prerequisites are met in the Lipotype Shotgun Skin Lipidomics Technology platform. As Prof. Kai Simons, CEO of Lipotype, explains: “We developed and validated a quantitative high-throughput shotgun mass spectrometry-based platform for lipid analysis of tape-stripped skin samples. It features coverage of 16 lipid classes; total quantification to the level of individual lipid molecules; excellent reproducibility and high-throughput capabilities.” The development of the Lipotype Shotgun Skin Lipidomics Technology was supported by the German Central Innovation Programme for SMEs.

### **Results of the largest lipidomic study**

We conducted a large lipidomic study of 268 human stratum corneum samples, where we investigated the relationship between sampling depth and lipid composition, lipidome variability in samples from 14 different sampling sites on the

human body and finally, we assessed the impact of age and sex on lipidome variability in 104 healthy subjects. We found sebaceous lipids to constitute an abundant component of the stratum corneum lipidome as they diffuse into the topmost stratum corneum layers forming a gradient. Lipidomic variability with respect to sampling depth, site and subject is considerable, and mainly accredited to sebaceous lipids, while stratum corneum lipids vary less.

### **Applications of skin lipidomics**

With tools such as Lipotype Skin Lipidomics it is now easy to investigate the healthy skin lipidome, how it changes in diseases or upon intervention with a drug or a cosmetic product. This lipidomic data can be also used to assess the action of substances influencing skin lipid metabolism or the skin microbiome-lipidome relation as well as the impact of cosmetic substances on the skin lipidome for cosmetic claim support. "We also see a great potential for the current trend of personalized cosmetics by differentiating consumer groups based on skin lipid composition for development of personalized cosmetics", says Dr. Oliver Uecke, Head of Business Development and Finance at Lipotype GmbH.

***Read the full study: Sadowski T. et al. "Large-scale human skin lipidomics by quantitative, high-throughput shotgun mass spectrometry." Scientific Reports 2017, <http://dx.doi.org/10.1038/srep43761>***

***Download a White Paper about Lipotype Skin Lipidomics: <https://www.lipotype.com/lipotype-skin-lipidomics/>***

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#### **About Lipotype**

Lipotype is a spin-off company from the Kai Simons and Andrej Shevchenko labs of the world-renowned Max-Planck-Institute of Molecular Cell Biology and Genetics in Dresden, Germany. Drawing on many years of cutting edge research, Lipotype delivers comprehensive, absolutely quantitative lipid analysis services for clinical and biological samples on a high-throughput scale. Lipotype offers high quality lipid analysis services for a wide range of customers and applications including biomarker identification for clinical researchers, pharma and biotech companies, functional food development for the food industry, claim support for the cosmetics industry, as well as for the small-scale profiling needs of academic researchers.