

PRESS RELEASE

IFSCC Applied Research Award 2018

Scientists of BRAIN AG receive top award for developing novel bioactive antiperspirants for cosmetics and skin care

Zwingenberg, Germany
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-)] **Dr Torsten Ertongur-Fauth awarded at 30th IFSCC Congress presenting cutting-edge innovations**
-)] **BRAIN's technology based on special expertise for cell-based assays to reproduce sensory processes and reactions**
-)] **Novel approach addresses growing markets for natural-source and aluminium-free antiperspirants and deodorants**

A senior researcher of BRAIN AG, a German listed industrial biotechnology company, has received the top award in the Applied Research category at the 30th IFSCC Congress "Cosmetics: Science for Beauty and Lifestyle" held from September 18 to 21, 2018 in Munich, Germany. The IFSCC Congress is recognized as the world's most authoritative meeting where researchers share their up-to-date findings in the field of cosmetic science and skin biology. The papers selected for presentations at the congress are strictly evaluated by criteria such as novelty, independence and scientific evidence.

Among a total of 85 distinguished oral papers, Dr Torsten Ertongur-Fauth, Senior Research Scientist and Project Manager at BRAIN AG was chosen to receive the Applied Research Award for his presentation "Towards novel bioactive antiperspirants for cosmetic applications". The research team at BRAIN, together with scientific partners, has developed a new concept for sweat reduction based on

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directly targeting primary fluid secretion in human sweat glands. BRAIN researchers uncovered a previously unidentified key player in human sweat glands – the TMEM16A ion channel, also known as ANO1. They then generated a cell-based assay to emulate it. This assay was combined with preselected compound libraries, and small-molecule modulators of the ion channel have been identified using high-throughput screening campaigns.

During his presentation at IFSCC 2018, Dr Torsten Ertongur-Fauth outlined the scientific interest and market pull for his research: “Sweat production is a fundamental process required for human thermoregulation. In today’s society, however, extensive sweating is considered as unpleasant. Sweat reduction by antiperspirants is therefore of huge cosmetic interest. The quest for new care products is also driven by consumer demands in natural ingredients which protect against sweat production and body odours. Our solution combines these characteristics. Currently, the global use of aluminum salts as antiperspirants is controversially discussed, but convincing alternatives do not exist so far.”

Dr Michael Krohn, Executive Vice President and Unit Head BioActives & Performance Biologicals at BRAIN, who also was present at the IFSCC 2018, says: “We are very proud that our research team has won such a prestigious award for what can become a game-changer technology. BRAIN has developed a unique expertise in developing precise cell-based assays for reproducing sensory processes and reactions. These assays make it possible to simulate physiological processes in the skin and to make reliable statements at laboratory level on which skin reactions or taste perceptions are caused by contact with natural substances. We are aiming at joining forces with global cosmetics and skin care players and to provide access to our TRiP²Sensation and TRiP²Taste programs.”

BRAIN’s IP protected innovation is based on a scientific collaboration with the Darmstadt Dermatology Clinic (Hautklinik Darmstadt, Germany). The corresponding scientific paper published in 2014 in

Experimental Dermatology is still regarded as a key reference, both in terms of better understanding sweat production in human skin and concerning the development of gentle and skin-friendly body care products. More recent collaboration partners of BRAIN to develop the novel screening technology for bioactive antiperspirants have been the Department of Dermatology and Allergology at Ludwig-Maximilians-University and Nanion Technologies GmbH, both located in Munich, Germany.

Various safety and sweat-reduction efficacy tests with the novel technology are currently being performed at BRAIN *in vivo*. The cell-based screening procedure may also potentially be used for therapeutic purposes in patients suffering from excessive sweating (hyperhidrosis).

Other IFSCC 2018 award winning companies include DNA Gensee (France), Milbon Co. Ltd. (Japan), Shanghai Pechoin Group Ltd. (China) and Shiseido Company Ltd. (Japan). The International Federation of Societies of Cosmetic Chemists (IFSCC) is a worldwide federation dedicated to international cooperation in cosmetic science and technology. The IFSCC Congress takes place every two years. In 2018 the congress was hosted and organized by the German Society for Scientific and Applied Cosmetics (DGK).

Further information:

-) IFSCC Congress 2018: <https://ifsc2018.com/>
-) Ertongur-Fauth, T.: So long, sweat! Using biological methods to control perspiration: <https://www.brain-biotech.de/en/blickwinkel/structures/tschuess-schweiss/>
-) BRAIN granted patent protection for the development of biological antiperspirants: <https://www.brain-biotech.de/en/press/brain-granted-patent-protection-for-the-development-of-biological-antiperspirants>
-) Ertongur-Fauth, T., Hochheimer, A., Buescher, J. M., Rappich, S. and Krohn, M. (2014), A novel TMEM16A splice variant lacking the dimerization domain contributes to calcium-activated chloride secretion in human sweat gland epithelial cells. *Exp Dermatol*, 23: 825–831. doi:10.1111/exd.12543, <http://onlinelibrary.wiley.com/doi/10.1111/exd.12543/full>
-) Wilson, T. E. and Metzler-Wilson, K. (2015), Sweating chloride bullets: understanding the role of calcium in eccrine sweat glands and possible implications for hyperhidrosis. *Exp Dermatol*, 24: 177–178. doi:10.1111/exd.12595, <http://onlinelibrary.wiley.com/doi/10.1111/exd.12595/full>

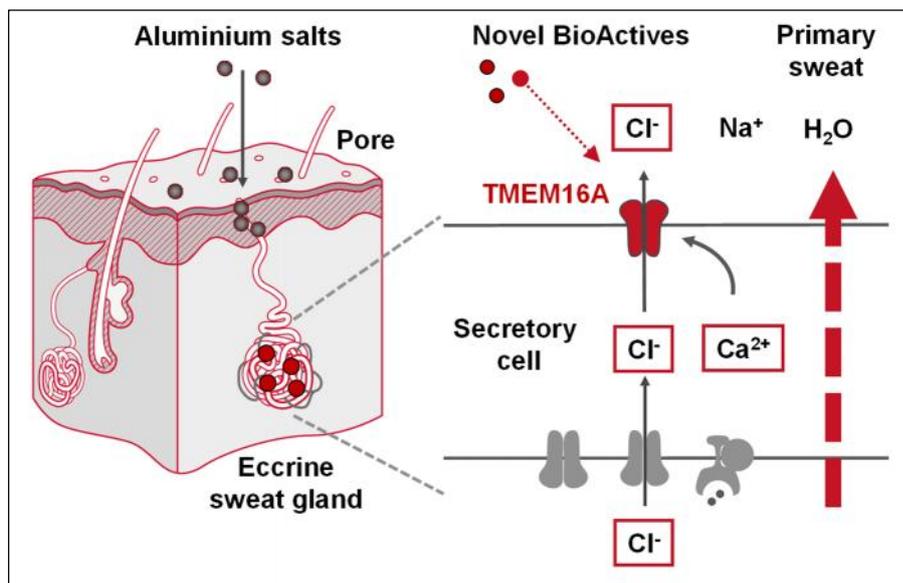


Figure: Mode-of-action of novel BioActives targeting TMEM16A in human eccrine sweat glands to reduce sweat formation. Schematic drawing of the human skin (left; illustration by Enrico Casper). Simplified molecular mechanism of sweat formation in secretory sweat gland cells (right). Aluminum salts simply block the sweat gland pore but do not reduce primary fluid formation in the secretory coil of the eccrine sweat gland. TMEM16A is the long-sought-for CaCC. TMEM16A is activated by intracellular Ca^{2+} and permits the efflux of Cl^- into the sweat gland lumen. This establishes an electrochemical and osmotic gradient, which provides the driving force to move water into the sweat gland lumen. Small-molecules that act as antagonists of TMEM16A reduce the activity of TMEM16A leading to reduced Cl^- secretion and less primary fluid secretion.

Figure: BRAIN AG, Zwingenberg, Germany

Available for download from <https://www.brain-biotech.de/en/press>

About BRAIN

B.R.A.I.N. Biotechnology Research and Information Network AG (BRAIN AG; ISIN DE0005203947 / WKN 520394) is one of Europe's leading technology companies in the field of industrial biotechnology, the core discipline of Bioeconomy. As such, BRAIN identifies previously untapped, efficient enzymes, microbial producer organisms or natural substances from complex biological systems that can be put to industrial use. The innovative solutions and products developed by help of this "Toolbox of Nature" are successfully applied in the chemistry, the cosmetics and the food industries. BRAIN's business model is based on two pillars - BioScience and BioIndustrial. The BioScience segment comprises its frequently exclusive collaboration business with industrial partners. BioIndustrial comprises the development and commercialization of BRAIN's own products and active product components. Further information is available at www.brain-biotech.de/en.