



Joint News Release

BASF and CTIBiotech announce first results of 3D human sebaceous glands technology for skin care applications

Experts demonstrated both ex vivo production of physiological sebum in 3D human sebaceous gland model and its regulation by means of active ingredients

January 9, 2018 – Sebaceous glands help the skin stay moist and protect it against external influences such as harsh weather, pollution, and microbial assaults: The oily or waxy matter that these microscopic, exocrine glands secrete – called *sebum* – lubricates and softens the skin and hair.

At NYSCC Cosmetic Congress, BASF Care Creations and the Cell Therapy Research Institute CTIBiotech presented the initial results of their joint research on 3D tissue models for the development and testing of bio-actives for skin care applications: After two years of research, the experts have now demonstrated both the *ex vivo* production of physiological sebum in a long-term culture of a 3D human sebaceous gland model, and the regulation of this sebum production by means of active ingredients.

Using CTIBiotech's 3D human sebaceous gland technology, scientists were able to improve BASF's 3D skin model portfolio. The new 3D technology provides a powerful platform for skin care researchers wishing to study the function of sebaceous glands, in relation to a range of age-related, microbial and inflammatory skin disorders.

"Working with BASF allowed us to validate a powerful technology for human skin care research in very little time," said Dr. Nico Forraz, Chief Executive Officer at CTIBiotech. "This positions CTIBiotech as a world leader in innovative and even disruptive technologies for human cell-based bioassays, applied to dermo-cosmetics."

"Compared to current *in vitro* methods, the 3D models developed by CTIBiotech allow analysis more in touch with human physiology and sebaceous gland metabolism," said BASF's project lead Dr. Sabine Pain. "That's how their technology helps us accelerate the development of innovative and highly reliable ingredients for the skin care market. Our understanding of sebaceous gland metabolism provides the basis for developing and testing advanced cosmetic bio-actives for skincare applications, and in particular skincare products for oily skin."

"Because of their experience and expertise in developing solutions for the dermo-cosmetics market, BASF understands the benefits of collaborating with tissue engineering experts," added Professor Colin McGuckin, Chief Scientific Officer and President of CTIBiotech. "The next evolution of the sebaceous gland model will be based on a 3D bio-printing technology that allows us to fully reproduce micro-glands into a full thickness skin model, *in vitro*."

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About BASF

At BASF, we create chemistry for a sustainable future. We combine economic success with environmental protection and social responsibility. The approximately 114,000 employees in the BASF Group work on contributing to the success of our customers in nearly all sectors and almost every country in the world. Our portfolio is organized into five segments: Chemicals, Performance Products, Functional Materials & Solutions, Agricultural Solutions and Oil & Gas. BASF generated sales of about €58 billion in 2016. BASF shares are traded on the stock exchanges in Frankfurt (BAS), London (BFA) and Zurich (BAS). Further information at www.basf.com.

About CTIBiotech – Cell Therapy Research Institute

Founded in 2008, CTIBiotech is specialized in biotechnologies and particularly in research on cancer, stem cells, tissue engineering and the production of innovative cell models (*in vitro* and *ex vivo*) for biomedical, pharmaceutical and dermato-cosmetic research, as well as medical devices applied to cell therapy. CTIBiotech implements a multi-disciplinary strategy that encourages and stimulates innovation in complementary areas: cellular biology, genetics, biomaterials chemistry, engineering, nanotechnologies, bio-imagery, biophysics and bioethics. CTIBiotech is an active member of professional and industry associations such as Lyonbiopôle, competitiveness cluster; the AFSSI, Association Française des Sociétés de Services et d'Innovation pour les Sciences de la Vie; European Center of Dermocosmetology, which promotes the activities of regional Rhône-Alpes cosmetics companies on a national and international level. Further information at www.ctibiotech.com.

Press contact

BASF

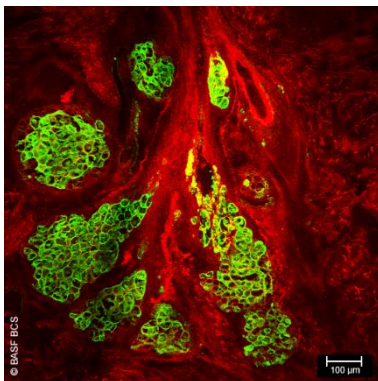
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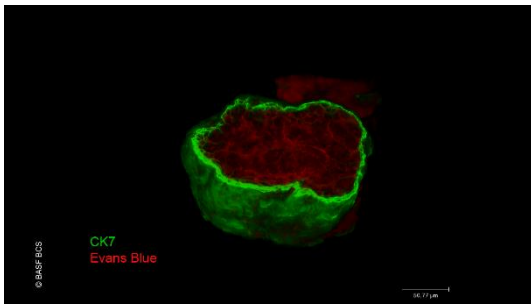
(Image 1)



(Caption 1)

Sebaceous gland with mature sebocytes forming lobes

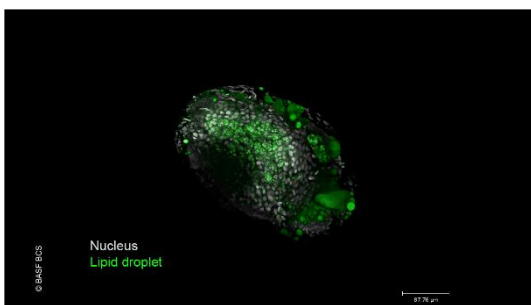
(Image 2)



(Caption 2)

3D imaging of isolated sebaceous gland. Immature sebocyte at the gland periphery

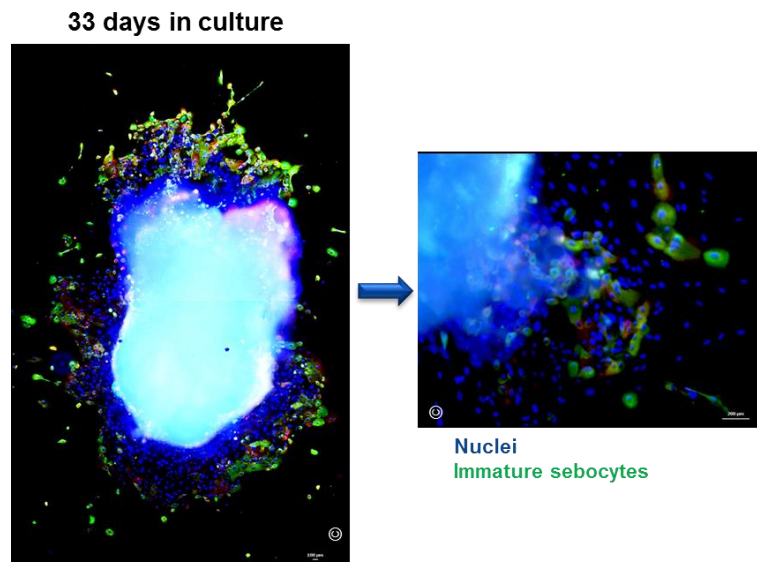
(Image 3)



(Caption 3)

3D imaging of isolated sebaceous gland. Lipid droplets produced by mature sebocytes

(Image 4)



(Caption 4)

Staining of a sebaceous gland in air liquid culture model after 33 days in culture