

Press release

Standardizing organoids on a large scale for the first time

Opening the door to personalized medicine

Lausanne/Neuchâtel, 10 December 2018—SUN bioscience launches its Gri3D™ platform. Industrialized with CSEM technological support, Gri3D™ enables the large-scale, standardized, rapid, and reliable production of 3-D in vitro organoid cultures from patient stem cells. This groundbreaking, large scale standardizing of organoids represents a key advancement toward truly personalizing medicine.

Organoids play an essential role in the development of personalized medicine based on the patient's genetic profile. Reproductions of human organs on a microscopic scale, they represent a solution of choice for drug testing. They also promise a better understanding of neurodegenerative diseases and cancers, paving the way for patient-specific drug screening. By offering a world first—large-scale production of these mini organs—[SUN bioscience](#)'s Gri3D™ platform takes a decisive step toward fully exploiting their potential.

Enabling reproducibility of mini organs on a large scale

Co-founder of the Swiss start-up, Sylke Hoehnel, explains the birth of this innovation: "As part of our research work at EPFL, we developed a new solution for culturing organoids from stem cells. Its innovative feature is in the U shape of the microwells in which the cells are grown in hydrogel. This difference allows the cells to self-organize and cluster in the desired 3-D formation."

Combining expertise in biotechnology, chemistry, microtechnology, and automation, it quickly became clear that CSEM was the ideal partner to industrialize this promising process for the production of standardized organoids. "In addition to technical skills, CSEM had the advantage of being familiar with the required multidisciplinary approach and having solid experience in production process engineering," notes Nathalie Brandenburg, co-founder of SUN bioscience. "And its researchers are used to supporting scientists in the industrialization of their innovations."

Creating an all-in-one platform for all organoid protocols

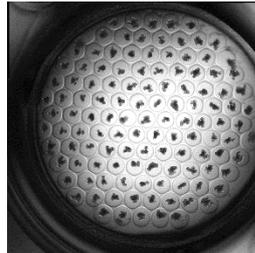
As part of an [Innosuisse](#) project, the Swiss R&D center industrialized the production of the Gri3D™ platform. "The robot we developed succeeded in creating exactly the needed hydrogel microtopography in which the human stem cells can be seeded," explains Gilles Weder, coordinator of CSEM's applied biosciences team. "What was decisive was that we carefully analyzed and simplified the production process before moving on to the automation stage."

With the introduction of Gri3D™, homogeneous populations of organoids from a specific patient can now be produced in a few days or weeks and even, for the first time, many months. Organoids such as the retina, intestine, brain, and pancreas have already been successfully produced and cultivated on the SUN bioscience platform.

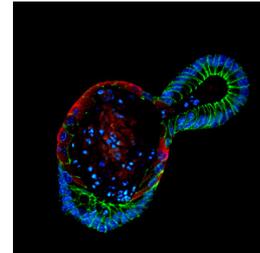
Winner of the 2017 edition of the [European Health Catapult Competition](#) in the biotech category, the start-up has also been recognized by the W.A. de Vigier Foundation. The company is already involved in a clinical pilot project to evaluate the efficacy of drugs on intestinal organoids from patients with cystic fibrosis. By making its platform and expertise available for pharmaceutical research, disease modeling, and clinical diagnosis, it aims to achieve a turnover of CHF 5 million in the coming years.



From left to right: Nathalie Brandenberg (SB), Sarah Heub (CSEM), Sylke Hoehnel (SB), and Gilles Weder (CSEM)



General view of about a hundred U-shaped wells (\varnothing 200 μ m) each containing an organoid



Detailed view of a fluorescent organoid with colors corresponding to specific proteins and functions

Additional information

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About CSEM

CSEM—technologies that make the difference

CSEM, founded in 1984, is a Swiss research and development center (public–private partnership) specializing in microtechnology, nanotechnology, microelectronics, system engineering, photovoltaics, and communications technologies. Around 450 highly qualified specialists from various scientific and technical disciplines work for CSEM in Neuchâtel, Zurich, Muttenz, Alpnach, and Landquart.

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