DEMCON life sciences & health

Technology partner for cell and organoid cultivation and analysis

Demcon develops innovative technologies for social challenges, with a strong focus on healthcare. A key focus area is biotechnology, where Demcon life sciences & health supports the entire process from cell cultivation to tissue and organoid production. "With our broad technology portfolio, we can make meaningful impact in the fields of medical technology, biotechnology, and pharmaceutical research."

Demcon started out in advanced mechatronics and has grown into a group of high-tech companies, with over 1,100 employees. For almost fifteen years, Demcon has been active in life sciences & health, covering medical technology, biotechnology, and in vitro diagnostics. "As a result, we have a lot of experience in developing (bio)medical technology, in particular bioreactor technology for regenerative medicine and tissue engineering," says Michiel Jannink, vice president of Demcon life sciences & health.

Full-blown design house

In the process, Demcon created a full-blown design house in life sciences & health, Jannink explains. "With our technology experts, application specialists and advanced facilities including cleanrooms and cell culture labs, we serve academic and corporate customers worldwide. We have competencies in system engineering and development of medical and biotech products and equipment, and broad regulatory and quality assurance expertise. In addition, we have acquired shares in various biotech companies, to become their technology and investment partner." These include Orgonex, Scinus Cell Expansion, ReGEN Biomedical and Sync Biosystems.

Improving organoid cultivation

Orgonex, for example, emerged from research into improving the cultivation process for organoids, miniature organ tissues that are used for both fundamental research and medical and pharmaceutical applications. This has resulted in a bioreactor that has a five times higher yield than traditional, manual cultivation methods. The compact system is easier to integrate into the lab process than other solutions for automating the cultivation.

Making stem cell therapy accessible

Another cultivation solution comes from Scinus Cell Expansion. They automate the expansion of stem cells to relevant numbers, to make stem cell therapy accessible worldwide to a broad group of patients. "We want to offer patients the prospect of a cure for diseases such as diabetes, Alzheimer's and ALS, and recovery from a heart attack or skin reconstruction. The latter is possible because Scinus' bioreactor technology can be used to scale up the cultivation of stem cells for the production of cells and microtissues."

Automating tissue production or regenerative medicine and pharmaceutical screening

Taking tissue sizes one step further, ReGEN Biomedical focuses on automating the production of biological tissues for regenerative medicine and pharmaceutical screening. The company develops advanced production facilities as part of the RegMed XB national pilot factory that is being set up to cover the entire chain of development and production of stem cells, mini-organs, tissues and smart (bio)materials. "Our participation in ReGEN Biomedical is a milestone in public-private partnership in the field of regenerative medicine. We are now at the beginning of the industrialization of tissue production for medical applications that hold great promise for patients," Dennis Schipper, CEO of Demcon, commented at the official launch.

Improving and enhancing biological assays

During development of drugs and treatments, accurate testing that is tailored to the patient is essential. Therefore, Sync Biosystems focuses on the use of high-tech engineering for improving current biological assays by introducing precise fluidic control. Using their proprietary technology, Sync Biosystems has a unique way to robustly automate advanced human cell culture models. In addition, it enables scientists to mimic patient-like (pharmaco)kinetics and apply more continuous readouts. "We want to make drug testing and disease modeling easier and more reliable," states Berend van Meer, managing director of Sync Biosystems. "To that end, we create a bridge between in vitro biology, microfluidics and mechatronics to add possibilities to existing assays without changing the workflow of the end user."

Impacting research and society

"All these companies are great additions to our biotechnology portfolio," Jannink concludes, "enabling us to cover the chain from cell cultivation to tissue and organoid production. Our ambition is to provide researchers and product developers with better cell culture models and more advanced tools for studying complex real-life problems. With our broad technology portfolio and synergy between our design house and the various companies, we can make real impact on medical, biotechnological and pharmaceutical research."