Press Release

EU Funds Stem Cell Technologies for Heart Repair – Eppendorf is Project Partner

Juelich, April 05th, 2016 – Within the EU Research and Innovation program Horizon 2020 the European Union is now funding the TECHNOBEAT research project with almost 6 million Euro. The pioneering project "Tools and *TECHNO*logies for *B*reaktrough in h*EA*rt *T*herapies" is coordinated by the Hannover Medical School. It will be processed by a pan-European and interdisciplinary consortium of eight partners from industry and science, one of them being Eppendorf. The scientists, medical experts, and engineers will cooperatively develop effective tools and innovative methods aiming for the production of cardiac microtissue for regenerative medicine. Primary cell material will be human induced pluripotent stem cells, so called hiPSCs.

Eppendorf is an industry-leading supplier of bioreactors and fermentors for the global biotech, pharmaceutical, and chemical industry as well as academia and research institutions. In the context of this EU project, DASGIP GmbH, an Eppendorf company, and the Eppendorf AG Bioprocess Center (both situated in Juelich, Germany), will develop innovative bioreactor solutions designed especially for the cultivation of hiPSCs in large scales. "We are pleased to have the Eppendorf Bioprocess Center in the TECHNOBEAT project team. In a long-standing cooperation we already have successfully developed bioreactors for the cultivation of 100 mL hiPSCs", states Dr. Robert Zweigerdt, Principal Investigator at Hannover Medical School, Germany and TECHNOBEAT coordinator. "Now, the exciting challenge is to adapt the existing product design to the needs of stem cell cultivation in a larger volume of 1 L", annotates Katharina Kinast, responsible Product Manager Bioprocess at Eppendorf. Development engineers and product managers at Eppendorf will create novel impeller and vessel designs to optimize hiPSCs culture mixing and shear characteristics. System-integrated filtering technology will be engineered. Holographic microscopy (industry partner Ovizio Imaging Systems NV/SA, Belgium) will be integrated as well. According to Katharina Kinast this will "altogether enable tight control and real-time monitoring of cell aggregate formation". With its experience in polymer production and bioreactor design, Eppendorf will further contribute to establishing a GMP-conform hiPSC production process using single-use bioreactor technology.
TECHNOBEAT can provide groundbreaking findings and methods that may revolutionize cell-based heart therapies. „In the future, the microtissues may be grown outside the body in bioreactors and then injected into the patients damaged heart as a cell implant for curative treatment", outlines Robert Zweigerdt. "Hundreds of patients with cardiac diseases waiting for an organ transplant may benefit from this technology."

The pan-European TECHNOBEAT project builds an integrated and application-oriented research approach. For the first time, the consortium combines technologies enabling the mass production of stem cells under defined quality criteria, a strategy for growth of

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implantable microtissue, methods for evaluation of implant success in mammals as well as designated clinical expertise in cardiology, cardiac surgery, and multimodal imaging.

By the cross-border networking of specialists and know-how, TECHNOBEAT supports the expansion and competiveness of the biomedical sector in Europe.

The project is funded for a period of four years. Apart from the Hannover Medical School and Eppendorf the following Institutions and companies are partnering the project: the Medical Centers at the universities of Leiden and Utrecht, the Netherlands, the University of Sheffield, UK, the Paracelsus Medical University, Austria and the industrial partners Ovizio Imaging Systems NV/SA, Belgium and Kadimastem Ltd., Israel.

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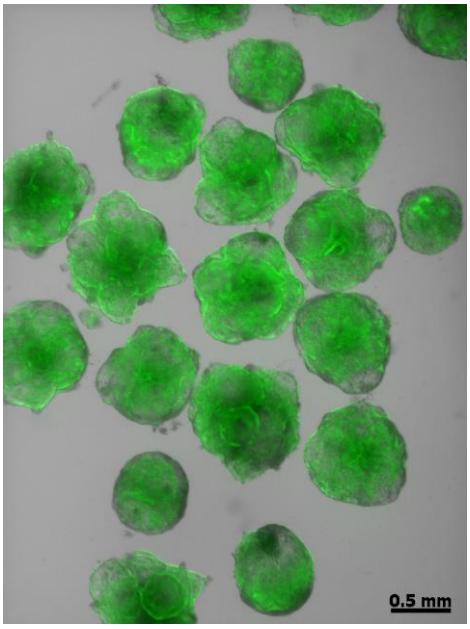

Cystic cardiac speroids of up to 1 mm size rhythmically contracting while floating in suspension culture. The speroids were generated from human pluripotent stem cells differentiated in stirred-tank bioreactors. Green fluorescence indicates cell differentiation into cardiomyocytes (Kempf *et al.*, 2014, 2015).

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About Eppendorf AG:

Eppendorf is a leading life science company that develops and sells instruments, consumables, and services for liquid handling, sample handling, and cell handling in laboratories worldwide. Its product range includes pipettes and automated pipetting systems, dispensers, centrifuges, mixers, spectrometers, and DNA amplification equipment as well as ultra-low temperature freezers, fermentors, bioreactors, CO2 incubators, shakers, and cell manipulation systems. Consumables such as pipette tips, test tubes, microliter plates, and disposable bioreactors complement the range of highest-quality premium products.

Eppendorf products are most broadly used in academic and commercial research laboratories, e.g. in companies from the pharmaceutical and biotechnological as well as the chemical and food industries. They are also aimed at clinical and environmental analysis laboratories, forensics, and at industrial laboratories performing process analysis, production, and quality assurance.

Eppendorf was founded in Hamburg, Germany in 1945 and has about 2,930 employees worldwide. The company has subsidiaries in 25 countries and is represented in all other markets by distributors.

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