Combining Brain-on-chip and AI to tackle Alzheimer's Disease

Graz (Austria): Graz-based companies KML Vision and NORGANOID start a unique collaboration to enhance drug development for dementia and Alzheimer's disease. By using artificial intelligence (AI), the quality of brain-like structures, which are grown from stem cells, can be checked accurately and automatically. The project is funded by DIGI-B-CUBE, a part of the European Union's Horizon 2020 research and innovation program.

Dementia and Alzheimer's disease are the most prevalent neurodegenerative diseases, affecting almost 50 million people worldwide, with a tremendous impact on individuals and healthcare systems. For drug research and development, samples that are similar to the structure of the human brain are required. Recent advances in stem cell technology allow the generation of such sophisticated 3D structures, called organoids. They can be investigated on fluidic chips, improve drug research, and enable modelling of individual problems on the way towards personalized medicine. However, the creation of these organoids is difficult and the necessary visual inspections are performed manually. This is tedious, heavily relies on trained staff and is thus expensive, which limits the use of organoids in translational medicine.

For that reason the companies KML Vision and NORGANOID started a unique collaboration with the goal to develop a digital, worldwide available service to monitor the quality of human organoids at different stages of tissue engineering. KML Vision's outstanding expertise on the use of artificial intelligence for fully automated image analysis and NORGANOID's experience in human 3D tissue engineering are a perfect match in pursuit of this goal. The project partners target the pharma market, where this service can speed up neurodegenerative disease drug development.

The great potential of this project was also recognized by DIGI-B-CUBE, a program supported by the European Union's Horizon 2020 research and innovation program with the aim to foster integration of IT innovations into the healthcare sector. It was selected from over two hundred applications as one of the top applications. The project has already started, KML Vision and NORGANOID plan a project duration until spring next year.

The Deep-Tech company KML Vision GmbH is based in Graz and was founded in 2018. The team of KML Vision has strong expertise in the smart practice of automated image analysis based on artificial intelligence. For their customers in Life Sciences, Pharma and Healthcare they created IKOSA®. This highly scalable software platform empowers research teams to work with image data in order to support tedious, time-consuming tasks and achieve accurate and reproducible results.

The biotech and Life Science company NORGANOID is based in Graz and was founded in 2019. Having a pending patent on a 3D organ-on-chip device the startup plans to significantly contribute to the establishment of personalized medicine into the healthcare system. It aims to enhance the research on neurodegenerative diseases and elevate the efficiency of drug development.

Images:
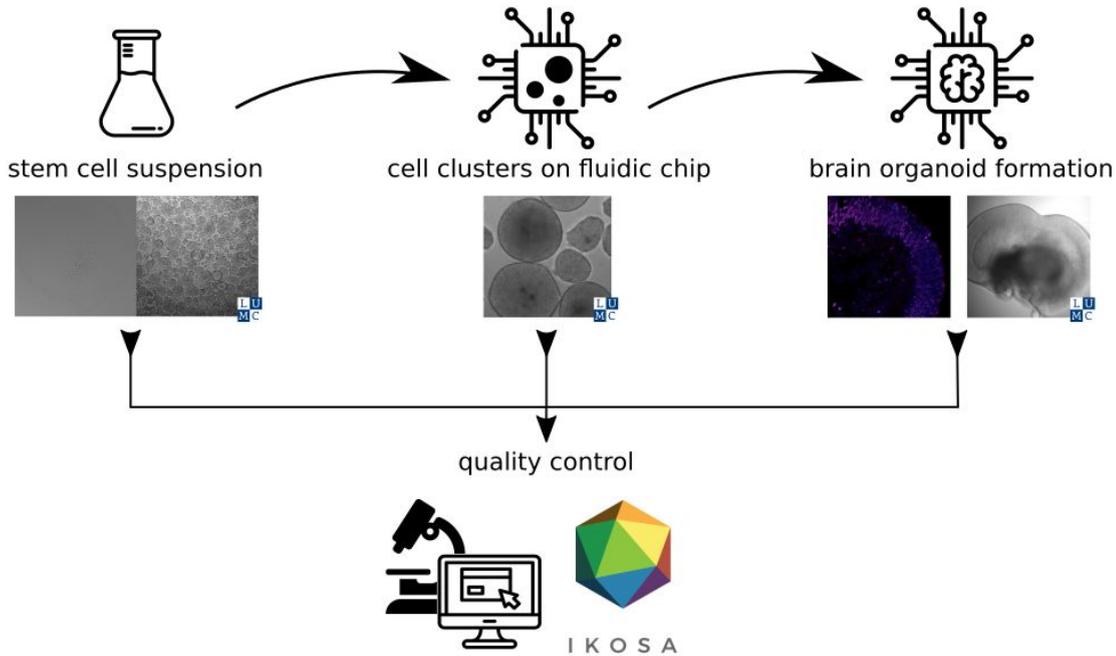
Automated quality control of brain organoids by using Artificial Intelligence on the IKOSA platform

CEO NORGANOID Charlotte Ohonin and CEO KML Vision Philipp Kainz

References and further information

- DIGI-B-CUBE Official Website: https://digibcube.eu/
- Business Upper Austria: https://www.biz-up.at/
- KML Vision GmbH Official Website: www.kmlvision.com
- IKOSA Platform: www.ikosa.ai
- NORGANOID Official Website: http://norganoid.com/

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