Website address:
https://www.gesundheitsindustrie-bw.de/en/article/press-release/improving-cancer-therapy-artificial-organs-dfg-funds-research-training-group-org-boost-around-nine-million-euros

Improving cancer therapy with artificial organs DFG funds research training group "Org-BOOST" with around nine million euros

Recreating tumour tissue in the laboratory as realistically as possible and developing new approaches for personalised cancer medicine: Starting in spring 2026, a total of 20 doctoral students in the life sciences and ten Medicine students will be researching this in the new "Organoid-Based mOdelling of Solid Tumours" research training group at Ulm University. They want to gain a better understanding of cancer and better predict the course of the disease and the effect of therapies. The German Research Foundation (DFG) is funding Org-BOOST with almost nine million euros over an initial period of five years.

Cancers, for example of the pancreas, bladder or breast, are still among the most common causes of death. In order to better research these diseases, "mini-tumours" are reproduced in the test tube. These organoids, grown in the laboratory from stem or tumour cells, mimic the individual characteristics of organs or cancer tissue of individual patients and thus enable customised therapy planning, the effectiveness of which can be tested in advance in the laboratory. Such patient-derived tumour organoids and 3D models generated from human stem cells are the focus of the new research training group "Organoid-Based mOdelling of Solid Tumours" (Org-BOOST) at Ulm University, which the DFG is funding with almost nine million euros. In order to understand the interaction of the tumour with its microenvironment, tumour organoids are also combined with immune cells, connective tissue and blood vessel cells to form so-called assembloids.

"We are bringing the tumour tissue of individual patients into the Petri dish, so to speak," explains Professor Alexander Kleger, Director of the Institute of Molecular Oncology and Stem Cell Biology at Ulm University Hospital and spokesperson for the research training group. "This allows us to investigate very precisely which combinations of genetic changes, immune response and microenvironment determine whether a tumour grows aggressively or responds to a specific therapy."

Individual tumour organoids using automated processes

In a total of ten closely networked projects, Org-BOOST is dedicated to different types of tumours - including those of the pancreas, urinary bladder, intestine, breast and malignant diseases of the blood system. The aim is to identify common disease mechanisms, find new biomarkers and develop starting points for customised therapies. The Ulm Core Facility Organoids (CFO), a kind of "living biobank" in which tumour samples from patients are collected, plays a central role in this. Thanks to automated processes, large numbers of individual tumour organoids can be generated there and tested experimentally. In Org-BOOST, these samples are to be molecularly characterised and evaluated using machine learning methods.

"Org-BOOST is one of the first research training groups in the world to place organoid technologies at the centre of a structured doctoral programme," emphasises Juniorprofessor Markus Breunig, co-speaker of Org-BOOST and group leader at the Institute of Molecular Oncology and Stem Cell Biology. "By closely interlinking the clinic, stem cell biology, 3D biofabrication and data science, we are creating a unique environment in which young researchers can learn to understand cancer on several levels simultaneously." Dr Mirja Harms, co-spokesperson of Org-BOOST and group leader at the Institute of Molecular Virology, explains: "Our organoid models are not just research tools, but an important building block for translational oncology. In the long term, we want to help make therapy decisions more data- and model-based - with the aim of improving cancer patients' chances of survival and quality of life."

The research training group offers a structured qualification programme with organoid-specific laboratory courses, retreats and innovative formats. Org-BOOST is integrated into the International Graduate School in Molecular Medicine Ulm (IGradU) and is closely linked to the Ulm 3R Centre i3RU and the Comprehensive Cancer Center Ulm (CCCU). Through the systematic use of human organoids, animal experiments are to be reduced and unavoidable in vivo models better prepared.

About the DFG's Research Training Groups

The German Research Foundation (DFG) is reinforcing the structured award of a doctoral degree in Germany with Research Training Groups. In these research and

qualification networks, doctoral students work on current scientific issues within a clearly defined, interdisciplinary framework and at the same time acquire important transferable skills for careers within and outside academia. The DFG currently funds more than 200 research training groups nationwide.

Press release

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Source: Ulm University

Further information

- Ulm University
- Org-BOOST