

MediTOM – fully automated analysis

LAB 4.0 for Digital Life Science

Non-invasive analytics of cell biological test systems – example malignant melanoma

With the development of a measurement system for automated monitoring of tumor growth of pigmented tumor cells, the Center for Device Development CeDeD presents a new laboratory device for the standardized and independent analysis of cell biological in vitro test systems.

The device and control software are specifically designed for the precise detection of changes in 3D tissue models and can be integrated into incubators. They support validated evaluation and the digital and centralized acquisition of analysis data.

In vitro test systems

At Fraunhofer Translational Center for Regenerative Therapies TLC-RT, methods have been developed to produce in vitro skin models from human skin cells. These tissue models can be used to identify damaging substances or to verify a positive effect on skin tissue without the need for animal testing.

Depending on the question to be addressed, various tissue models can be used. Advantage of the assay developed by the TLC-RT is the combination of healthy skin tissue and the diseased tissue (example: melanoma) in a 3D tissue model.

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Control software

- Camera activation with screenshot function
- 3-axis control in x-, y- and z-direction
- Exact and storable position approach
- Positioning program can be saved in order to move to the exactly same position at the next attempt
- Automatic recording after position approach

Image evaluation

- Loading of several images
- In the first step, simple evaluation of the area ratios
- Definition of search areas
- Determination of area sizes
- Own software – analyzer

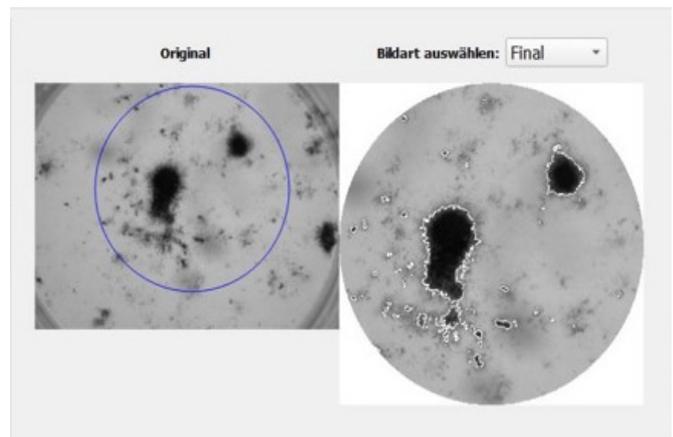
Automation and digitization in the laboratory

Visualized analysis of tumor growth by a fully automated test device, digital image data acquisition with real-time evaluation and tracking of changes in in vitro test systems as well as visualization of the effect behavior of drugs provide a valid data basis for digitized, faster development of therapies and selection of active ingredients for individualized treatment.

Customized device development at CeDeD

Center of Device Development CeDeD develops, designs and builds special scientific equipment and research facilities according to individual customer requirements. At the location Bronnbach, CeDeD offers comprehensive expertise in the fields of scientific development, planning, design, construction design and manufacture of research equipment. The entire development process ranges from concept and design phases based on 3D modeling programs to computer-aided component production in the workshop. CeDeD offers companies and research groups automated device solutions.

CeDeD manufactures prototypes, demonstrators and pilot plants for the production and processing of innovative materials and research instruments for process as well as quality control at the end of the value chain. One focus is on the interface between real material and digital material data space as well as the preparation of data for further processing in AI-based systems. Automation and the creation of suitable interfaces for the digital recording of material-specific parameters form the basis for this.



Further informations

Center of Device Development CeDeD

www.ceded.de

Fraunhofer Translational Center for Regenerative Therapies TLC-RT

www.tlz.fraunhofer.de

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