

Joined Ph.D. thesis between Karlsruhe Institute of Technology and University of Heidelberg
Development of prognostic test on-a-chip for personalized oncology

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Starting date: January 1, 2020

Duration: 3 years

Qualification: cell and molecular biology, cancer biology

Description:

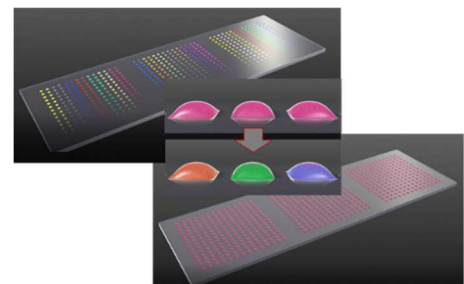


Most cancer patients are treated with standard therapies; however, each cancer is different, and most cancer patients do not respond to standardized treatments. Drug Sensitivity and Resistance Test (DSRT) can be performed in order to identify effective therapy for each individual patient. Applicability of this test is limited due to requirement of high number of patient cells. **The main aim of this project is to establish a miniaturized DSRT protocol on Droplet Microarray, where minute**

number of patient cells can be screened in nanoliter volumes against large panel of anti-cancer drugs. Droplet Microarray (DMA) platform was developed in the group „Functional and stimuli-responsive polymer surfaces“ at Karlsruhe Institute of Technology (KIT). DMA is based on hydrophilic-superhydrophobic patterning and enables formation of wall-less arrays of separated stable nanoliter droplets, which serve as nano-wells for culturing cells.

The main activities will include:

- Establishing and optimizing protocols for culturing different types of patient-derived cancer cells on DMA
- Optimizing staining and imaging, as well as image analysis, protocols.
- Optimizing other read-out protocols including MALDI and mRNA-seq-on-a-Chip
- Performing drug screening on patient-derived cells and collecting large data set on cancer patients.



The work will be performed at both Karlsruhe Institute of Technology and University of Heidelberg