TECHNOLOGY OFFER

Sensor-Integrated Microfluidic Platform for Drug Screening Applications of 3D Organoids

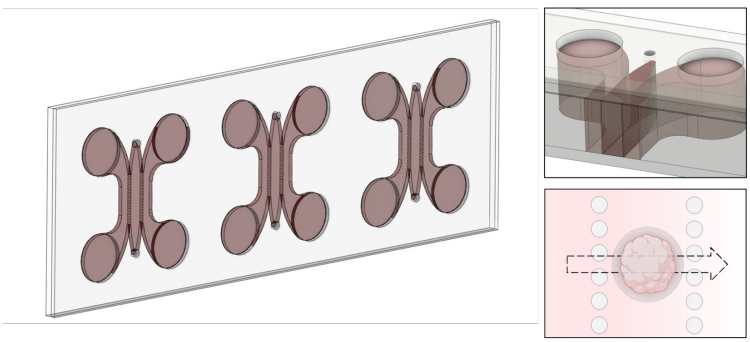
By enabling the generation of three-dimensional tissue-analogs capable of emulating intricate organotypic characteristics on both a structural and functional level, organoid technology has become an indispensable tool in the field of *in vitro* modelling. However, nutrient-deficiency-based growth restrictions resulting from the organoids' intrinsic structure as well as time-consuming and invasive analysis strategies have restricted the technology from unlocking its full potential and thus have called for innovative solution strategies. By combining state-of-the-art organoid technology with the advantages of microfluidics, a sensor-integrated microfluidic platform for the long-term cultivation and non-invasive monitoring of induced pluripotent stem-cell-derived organoids is being developed. While the integration of optical and electrical sensors enables the non-invasive monitoring of critical physiological aspects, including oxygen demand, electrophysiological activity and biomolecule release, a dynamic cultivation milieu enhances organoid viability and differentiation. The integrated sensor array provides in situ information about crucial aspects in organoid development such as differentiation, disease onset, progression as well as potential remission. As such the miniaturized platform provides a promising tool for pre-clinical drug screening applications.

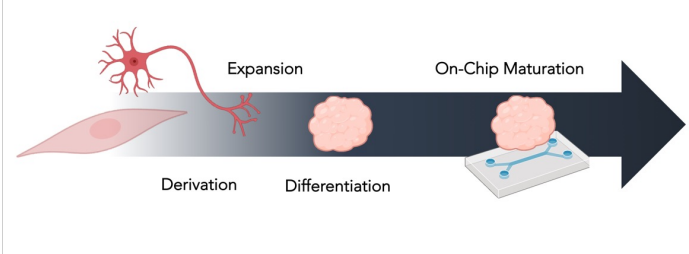
Further Reading:

https://doi.org/10.1101/869701.

Benefits:

- Improved organoid differentiation
- Complex biological models in a highly physiological environment
- Non-invasive monitoring of critical physiological aspects
- In-situ drug screening platform





Keywords:

Organoids
Organ-on-a-chip technology
Non-invasive monitoring

Applications:

Compound Screening
Drug Development
Personalized Medicine
Toxicity Screening

IPR:

EPO App.No.20173702.0-1101

Development Status:

alpha prototype ready

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