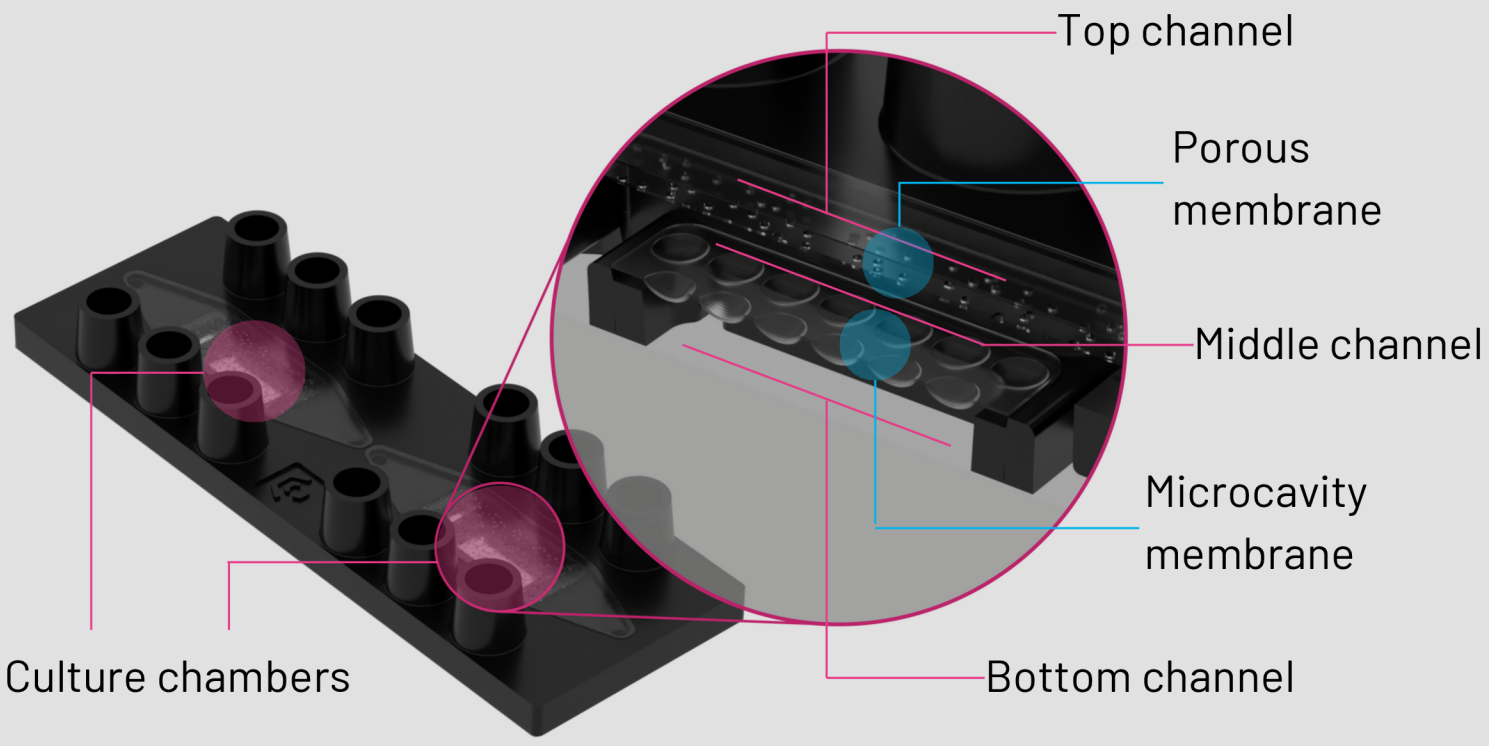
DYNAMIC42

SPHEROID ON CHIP

Spheroids are used to model a plethora of healthy or malignant tissue types. They are more reliant than 2D cultures in predicting *in vivo* tissue functions. In combination with the Dynamic42 biochip, spheroid-on-chip is a powerful tool for dynamic drug screening, tissue engineering and basic science.



Features

/ Three-channel biochip
/ Including one channel with microcavities (∅ 800µm)
/ Two culture chambers per biochip
/ Cultivation of up to 2x25 spheroids
/ Low-adsorption material biochip

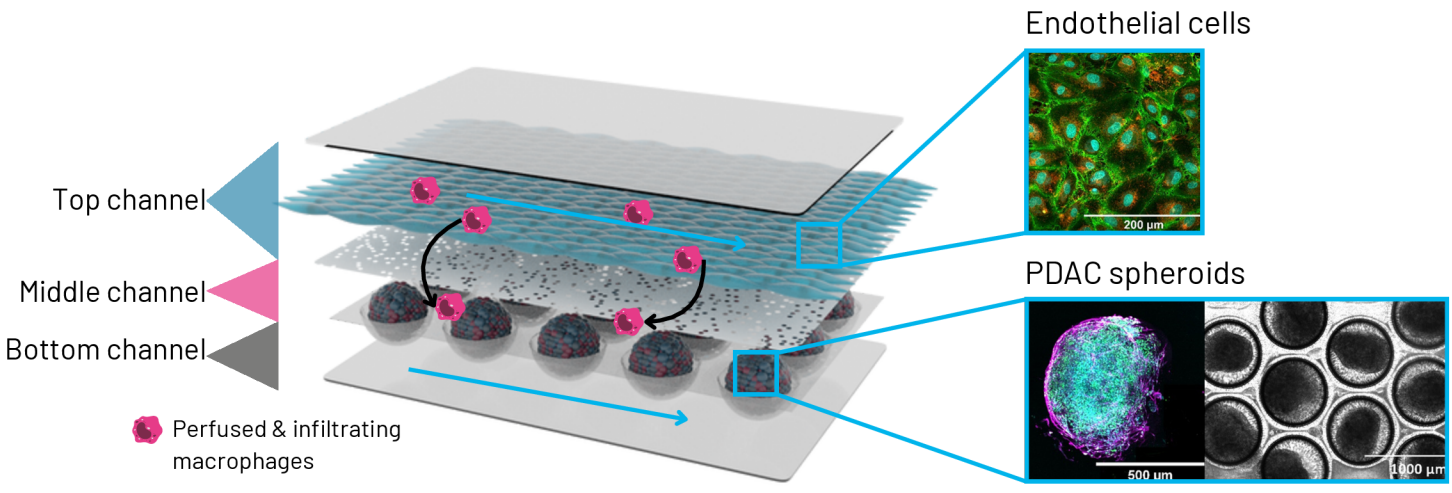
Characteristics

/ Complex multilayer co-culture
/ Immune-ready
/ Vascularization
/ Perfusion
/ Extracellular Matrix compatible
/ Sampling of spheroids during the experiment

Spheroid-on-chip model for pancreatic cancer

App Note

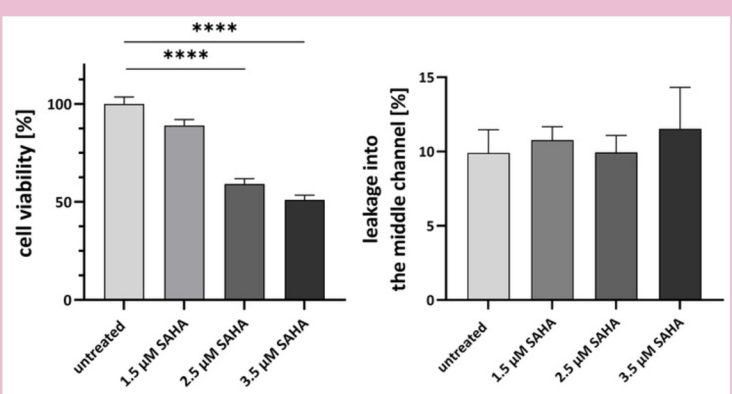
Pancreatic ductal adenocarcinoma (PDAC) is one of the most lethal solid malignancies, with a five-year survival rate of less than 10%. Here, we present a microfluidic system, developed with the HHU (Düsseldorf), that recapitulates the multicellular tumor microenvironment of PDAC for dynamic drug administration and immune cell invasion via an endothelium.



Dynamic drug administration

Viability of PDAC spheroids

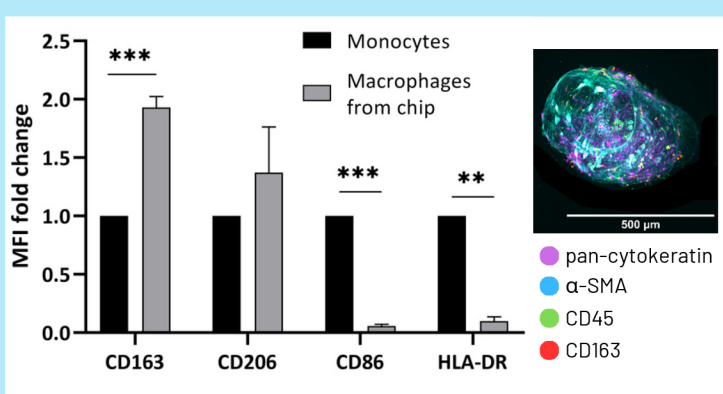
Barrier integrity of endothelial layer



Dynamic drug administration of SAHA (72h) showed significantly impaired viability of PDAC spheroids, while integrity of the endothelial layer stayed intact.

Immune cell infiltration

Marker characterization of immune cells and IF staining of PDAC spheroids



Perfused Monocytes (CD45+) infiltrate PDAC spheroids via the endothelial layer. In the spheroids they polarize towards Macrophages of the tumor-associated M2 Phenotype (CD163+/CD206+/CD86low/HLA-DRlow).

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