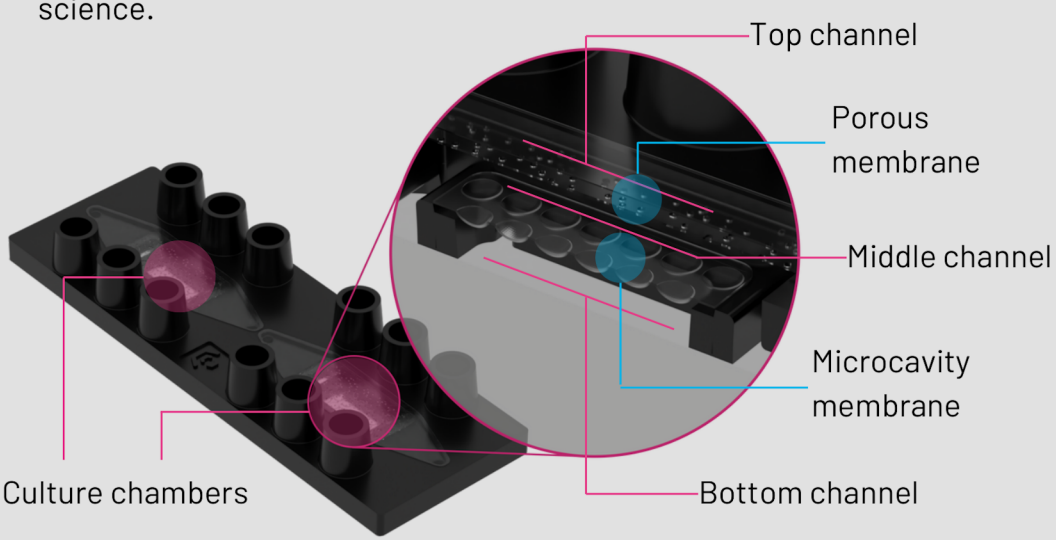
DYNAMIC42

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, spheroids become then a popular system for dynamic drug screening, tissue engineering and basic science.



Features

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

Characteristics

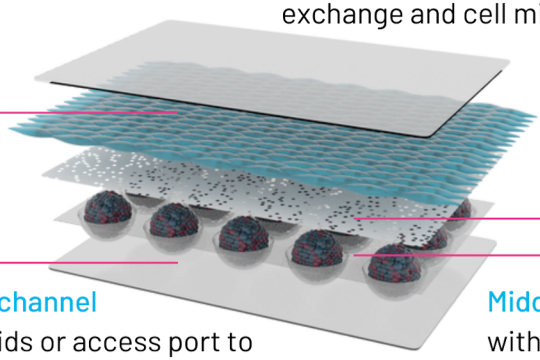
/ Complex multilayer co-culture / Immune-ready
/ Vascularization
/ Perfusion
/ Extracellular Matrix compatible
/ Sampling of spheroids during the experiment

Pancreatic cancer spheroid based model

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 for drug testing that recapitulates 3D cellular heterogeneity of PDAC including a vascularization that was developed in collaboration with the Heinrich-Heine-University Düsseldorf.

Perfused top channel
with endothelial cells seeded on membrane

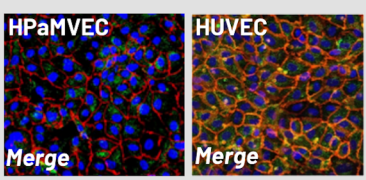
Porous membrane
separates chambers, allows compound exchange and cell migration



Perfused bottom channel
feeding of spheroids or access port to sample spheroid conditioned media

Middle channel
with spheroids loaded into microcavities

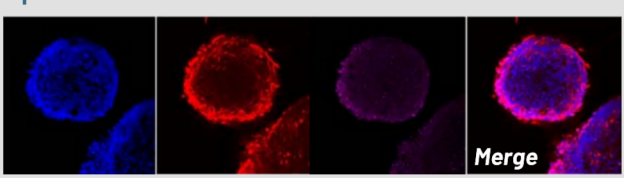
Endothelial cells



CD31
vWF

veCad
vWF
CD31

Spheroids



DAPI
Pan Cyto
Ki67

Expression of classical proliferation and differentiation markers on chip.

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