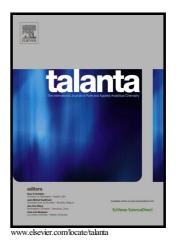
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Near-physiological microenvironment simulation on chip to evaluate

drug resistance of different loci in tumour mass

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ABSTRACT

Developing a bio-functional model *in vitro* to study cancer resistance, which is a big challenge for clinical cancer therapy, is of great interest. Such reliable model requires appropriate drug diffusion kinetics simulation and a microenvironment that allows cell-cell and cell-matrix interactions. In this work, a special hydrogel-based three-dimensional (3D) microfluidic chip was constructed to simulate tumour-vascular microenvironment. The self-healing hydrogel supports long-time cell survival and proliferation, effective cellular metabolism of cancer drugs and cell-cell interaction between different types of cells. In the effective near-physiological tumour-vascular microenvironment, the endothelial and fibroblast cells are spread on different sides of a porous membrane, while sensitive and resistant breast tumour cells are separately cultured in the dynamic hydrogel consisting of glycol chitosan and telechelic difunctional poly (ethylene glycol) in the upper chambers. Download English Version:

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