

Novel cost-efficient protein-membrane based system for cells co-cultivation and modeling the intercellular communication

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Abstract

In vitro systems serve as compact and manipulate models to investigate interactions between different cell types. A homogeneous population of cells predictably and uniformly responds to external factors. In a heterogeneous cell population, the effect of external growth factors is perceived in the context of intercellular interactions. Indirect cell co-cultivation allows one to observe the paracrine effects of cells and separately analyze cell populations. The article describes an application of custom-made cell co-cultivation systems based on protein membranes separated from the bottom of the vessel by the 3d printed holder or kept afloat by a magnetic field. Using the proposed co-cultivation system, we analyzed the interaction of A549 cells and fibroblasts, in the presence and absence of growth factors. During co-cultivation of cells, the expression of genes of the activation for epithelial and mesenchymal transitions decreases. The article proposes the application of a newly available system for the co-cultivation of different cell types.

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