

عنوان مقاله:

Regulation of cell function by cell imprinting

محل انتشار:

اولین کنگره بین المللی مهندسی بافت و پزشکی بازساختی ایران (سال: 1397)

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خلاصه مقاله:

It is well believed that a cell responds to any change in its environment and to achieve desire result, a well defined culture condition is required. Generally, rigid and smooth tissue culture plates based on polystyrene are used in cell cultures while our flexible and textured soft tissues are formed by extracellular matrix mostly proteins. Cell morphologies are remarkably complex as it is regulated by different physical- chemical signals. Recent studies showed that substrate topographies can affect cell morphology and harness the fate of cell function. However, no research suggests a defined structure for physical simulation of natural cell morphology in vitro. We hypothesized that each cell type has special finger print which can be determined and applied to the substrates for specific aim. Our previous studies confirmed that imprinting the cell membrane can copy these finger prints on PDMS substrate and induce chondrogenic, tenogenic, keratinogenic and osteogenic differentiation in mesenchymal stem cells. Therefore, with this safe and simple method, cells can be prepared for transplantation with no or less amount of chemically stimulation factors. In future, cell imprinted substrates can be utilized in other fields of research such as migration of cancerous metastatic cells, drug discovery and toxicity evaluations

کلمات کلیدی:

Tissue regeneration, Cell imprinting, Stem cell differentiation, Surface topography

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