Scheda di Offerta Tesi

Titolo (provvisorio): Impacts of different extra cellular matrices on microfabricated 3D carbon grass structures for stem cell differentiation

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Descrizione

Motivazione e campo di applicazione

Stem cells (SCs) are cells, with the ability, to both self-renew and to differentiate into specialized cells, in response to appropriate signals. Cell therapy, is the most successful application of the stem cells till date. In order to understand the intricate (inter-intra) stem cells (SCs) signalling mechanisms, a sophisticated substrate modification such as micro and nano patterning of surface is required in order to understand and control cell differentiation or proliferation.

Obiettivi generali e principali attività

The goal of this project is to combine the effects of micro nano patterns with different extra cellular matrices (ECM) (e.g, Poly-lysine, Laminin and Matrigel) to examine changes in human neural stem cells (hNSCs) proliferation and maturation. For this purpose, flat surfaces of different materials such as plastic, glass and other polymers would be used as a comparison to premade 3D topographies for studying cells response. These experiments would be characterized using immunochemistry, electron microscopy, and electrochemical techniques.

Obiettivi di apprendimento (strumenti tecnici e analitici, metodologie sperimentali)

The student will be trained in:
- Human neural stem cell culture and differentiation methods
- Immunochemistry concepts and experiments
- Electrochemical detection techniques
- Cells characterization techniques (Light and Confocal microscopy, Scanning electron microscopy)

Luogo/i in cui si svolgerà il lavoro: Department of Health Technology, Technical University of Denmark, Kongens Lyngby, Denmark

Informazioni aggiuntive

Numero massimo di studenti: 1