Seminar

Prof. Nicola Elvassore

DIPIC Department of Chemical Engineering, University of Padova, Italy
VIMM Venetian Institute of Molecular Medicine, Padova, Italy

Microscale models for study of cell function in development and diseases

Recently, engineered tissues have found a promising application as in vitro models; they could be used to support the human tissue physiology and pathophysiology study. For instance, the development of new drugs and therapies for diseases such as myocardium failure is greatly slowed and hindered by the lack of adequate in vitro models, which should be functional, representative of human tissue, easy to use and economic. The use of a human cell source and the microscale design are important requirements, in order to reproduce with high precision the cell microenvironment and to properly guide cell differentiation.

The microscale gives the additional possibility of developing micrometric array of cells that can be coupled to microfluidic platforms for high throughput experiments, which are fundamental for multifactorial diseases.

In this scenario, the aim of this work is the obtainment of human functional skeletal and cardiac tissues, through the application of innovative microscale techniques to standard cell culture devices. The strategy employed is biomimetic and multidisciplinary: the cell culture microenvironment has been engineered in order to reproduce in vitro the major stimuli that guide cell differentiation in vivo. The coupling of tools and methodologies of the tissue engineering with microscale technologies has led to a precise control of the cell microenvironment in space and time. Taken together these results open new promising prospective for the development of in vitro model for preclinical trials of drugs or therapies for the treatment of pathologies of skeletal and cardiac muscles.

Friday, November 11th, 11h15
IMTEK - Institut für Mikrosystemtechnik, Raum 02 (2.OG)
016/018, Haus 101 (Dekanat), Georges-Köhler-Allee 106

Contact: Barbara Heck, IRTG Soft Matter Science
Tel +49 761 203 97778 Email softmattergraduate@uni-freiburg.de