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Prof. Emmanuel PAUTHE

Université de Cergy Pontoise, Maison Internationale de la Recherche - Laboratoire ERRMECe (France)

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«Proactive biomaterials: biomimetic interfacial properties and advanced delivery systems».

Wednesday 23 November 2016 – 01:00 pm
LAVO51
Lavoisier - Place L. Pasteur, 1, – LLN

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ABSTRACT

***Emmanuel Pauthe**, Ph.D., Professor of Biochemistry & Biomaterial Science and Chair of the Department of Biology at the University of Cergy-Pontoise (UCP). Leader of the team in Biomaterial for Health·*

Directing cell behavior is a key contemporary challenge in biomaterials science. Engineering advanced materials, able to proactively and efficiently "dialogue" with surrounding tissues, is at the heart of the work of the Biomaterials for Health group, led by Emmanuel Pauthe of the University of Cergy-Pontoise, France. Our activities are principally focused on the dynamics of extracellular matrix and biopolymer component assembly – at the molecular and supramolecular scales – in solution, at interfaces, and in biomaterials applications. During this seminar, two recent projects will be highlighted. The first involves polyelectrolyte-based films, formed via layer-by-layer assembly. In particular, strategies are presented involving i) nanotemplating, to spatially and temporally release bioactive molecules (e.g. BMP2), and ii) intrafilm fibronectin placement, for films with exceptionally high matrix protein content. The second project involves the engineering of a hydrogel scaffold glucose delivery system for enhancing mesenchymal stem cells survival. Such a system addresses a significant tissue engineering challenge: the massive death of transplanted cells that typically occurs following engraftment using currently available scaffolds. By supplying glucose in situ as a metabolic fuel for Mesenchymal Stem Cells (MSCs) in severe hypoxia, this new scaffold is shown to significantly enhance MSC survival. These strategies represent appealing bioactive systems able to enhance cell adhesion, spreading, proliferation and differentiation, and offer great potential toward a variety of cell contacting applications.

BIOGRAPHY

Leader of the team in Biomaterial for Health. Undergraduate from the University Paul Sabatier, Toulouse, France in Cell & Molecular Biology, 1989-1993. Graduate in 1998 in Biological Engineering from the University of Technology of Compiegne, France. Post-doctoral fellow from the Faculty of Pharmacy Amiens & University of Reims, 1998-1999. Creator and director at the UCP of the Master of Science Degree & the Program of Engineering in Biomaterial for Health. Seat on the boards of Directors of the Foundation UCP, Scientific Council and BIOMAT (French Society of Biomaterials and Regenerative Medicine).

Adjunct Professor from 2011-2014 at Laval University, Canada and Visiting Professor in chemical and biomedical Engineering from 2009-2011 at Yale University. 40 publications, 1 international patent, 28 invited lectures, >100 presentations at professional meetings

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