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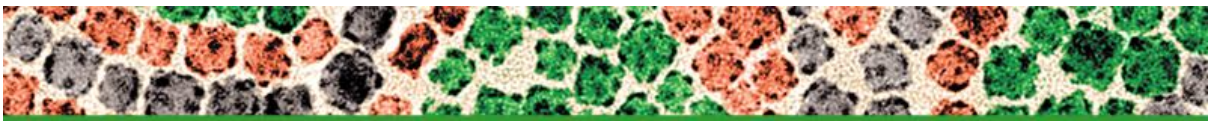

Modular Microenvironments for Stem Cell Differentiation and Delivery

Professor Jan P. Stegemann
Department of Biomedical Engineering, University of Michigan, USA

Wednesday, March 2, 2011 • 9:00am to 10:00am

Creation Theatrette, Level 4 • The Matrix, 30 Biopolis Street, Biopolis

ABSTRACT

Our laboratory studies how cells interact with the 3D protein environment that surrounds them in tissues, and how cell function can be controlled by defined extracellular environments. By recreating specific tissue environments *in vitro*, cell function can be tailored for the purpose of promoting desired cell behaviors. Biologically-derived proteins and polysaccharides are of particular interest in such applications due to their structural and functional roles in tissues, and the range of effects they can have on cells. We are developing composite materials that combine the structural and biochemical features of these polymers, in order to direct the phenotype of adult stem cells toward desired lineages. These materials are designed to mimic key features of the cellular environment in specific tissues, and can also be used to deliver cells in a minimally invasive manner. This talk will give an overview of our research and will highlight recent work in using such engineered microenvironments to direct the differentiation of adult mesenchymal stem cells for bone repair.

ABOUT THE SPEAKER

Dr. Stegemann is Associate Professor of Biomedical Engineering at the University of Michigan in Ann Arbor. He received his B.S. (1989) and M.S. (1992) degress in Chemical Engineering from the University of Toronto, and subsequently worked for five years at Boston-based W.R. Grace & Co. (later called Circe Biomedical), where his research focused on cell-based bioartificial organs. He received his Ph.D in Biomedical Engineering from the Georgia Institute of Technology in 2002 and from 2002-2008 he was Assistant Professor of Biomedical Engineering at Rensselaer Polytechnic Institute in Troy, New York. He received the Young Investigator Award of the International Society for Applied Cardiovascular Biology in 2002, a James D. Watson Investigator Award from New York State in 2003, and the Rita Schaffer Young Investigator Award from the Biomedical Engineering Society in 2005. In 2007, he was admitted to the Council of Outstanding Young Engineering Alumni at the Georgia Institute of Technology, and in 2010 he received the Outstanding Achievement Award from the Department of Biomedical Engineering at the University of Michigan.

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This seminar is free and no pre-registration is required.
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