



CENTER *for* APPLIED MOLECULAR MEDICINE



University of Southern California Physical Sciences in Oncology Center
Monthly Seminar Series

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"Progress and Prospects for Organ Regeneration"

FRIDAY, AUGUST 23, 2013

NOON - 1:00 P.M.

Q & A to follow

(Pizza and beverages will be served for attendees at 11:45 a.m.)

HARKNESS AUDITORIUM

HSC - Clinical Sciences Building, **2nd Floor**
2250 Alcazar Street, Los Angeles, CA

ABSTRACT:

Regenerative medicine and tissue engineering aim at repairing and/or replacing human tissues and organs in order to restore or establish normal function. Only in the last two decades regenerative medicine showed the potential for "bench-to-bedside" translational research in specific clinical settings. The process of regeneration may occur *in vivo* and/or *ex vivo*, and employs different technologies and methods where cells, natural or artificial scaffolds (namely, biomaterial-based constructs able to mimic the functions of the innate extracellular matrix [ECM] in order to induce three-dimensional tissue formation), growth factors, or combinations of all three elements are joined together. Tissue engineering mostly refers to the process of manufacturing cells, tissues and organs exclusively *ex vivo*.

Bioengineering solid organs destined to clinical transplantation is more complex and challenging. These organs organized in functioning units referred to as modules and requiring the reconstruction of the vascular supply. Recent attempts to translate solid organ engineering into the clinical arena indicate that it holds the promise of providing a formidable therapeutic tool for a myriad of diseases. Creation of custom-made bioengineered organs, where the cellular component is exquisitely autologous and have an internal vascular network, will theoretically overcome the two major hurdles in transplantation, namely the shortage of organs and the toxicity deriving from lifelong immunosuppression.

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