THE BRUMLEY D. PRITCHETT LECTURE SERIES
THE SCHOOL OF MATERIALS SCIENCE & ENGINEERING

ENGINEERING NEW ORGANS AND OTHER SMALL CHALLENGES

A LECTURE BY
PROFESSOR MOLLY STEVENS
IMPERIAL COLLEGE OF LONDON

THURSDAY, NOVEMBER 11, 2010
4:00 PM
FERST CENTER FOR THE ARTS, RICHARDS GALLERY
GEORGIA INSTITUTE OF TECHNOLOGY

BIOGRAPHY:

Professor Molly Stevens is Research Director for Biomedical Material Sciences in the Institute of Biomedical Engineering at Imperial College London. She joined Imperial in 2004 from Postdoctoral training with Professor Robert Langer at MIT. She graduated from Bath University with a first class honours degree in Pharmaceutical Sciences and was awarded a PhD in biophysical investigations from the University of Nottingham (2000). Amongst many awards, in 2009 she was awarded the Jean Leray Award from the European Society for Biomaterials. She has been recognised by Technology Review's TR100, a compilation of the top innovators worldwide. She has a large, extremely multidisciplinary research group of students and postdocs/fellows developing novel biomaterials for regenerative medicine and biosensing. She is the main founder of RepRegen which was awarded the ACES Amgen European Life Sciences company of the year 2009 and is setting-up a clinical trial for bone regeneration in humans.

ABSTRACT:

A disagreeable side effect of longer life-spans is the failure of one part of the body – the knees, for example – before the body as a whole is ready to surrender. The search for replacement body parts has fuelled the highly interdisciplinary field of tissue engineering and regenerative medicine. In view of the challenges in this field, one must consider that the human embryo in its first eight weeks of life undergoes an extraordinary transformation from a single cell to a 3-cm-long fetus with a beating heart, gut, nervous system, and limbs with fingers and toes. This progression involves massive growth, physical folds and twists, and myriad cellular and molecular events of breathtaking complexity; yet it is the ultimate goal of this field of tissue engineering to recreate some of these processes in microcosm, to replace and regenerate lost tissue. At last the field has entered a period of fruition, and seems set to realize its potential to treat a multitude of debilitating and deadly conditions such as myocardial infarction, spinal injury, osteoarthritis, osteoporosis, diabetes, liver cirrhosis and retinopathy. This talk will outline progresses in the field and how we are developing new bioactive materials that can be implanted into the body and provide the right environmental cues that promote tissue regeneration of large volumes of highly organised tissue such as bone. Controlling the properties of these polymer and inorganic materials right down at the nanoscale is crucial for the optimal tissue regeneration as will be discussed.

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