

PLENARY SPEAKER

ABSTRACT

Tuesday, October 3rd 14:30 - 15:30 - **Main Auditorium**

Title: Bio-responsive hybrid materials for regenerative medicine and biosensing



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Bio-responsive hybrid materials are of growing importance with potential applications including drug delivery, diagnostics and tissue engineering. 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. This talk will describe our research on the design of new hybrid (nano)materials and nanomaterials to direct stem cell differentiation for regenerative medicine. We have also designed and developed porous silicon “nanoneedles” capable of efficiently, rapidly and safely delivering sensitive biocargoes to cells and tissues in vivo as well as interfacing with cells to inform intracellular pH and high resolution demarcation of tumorous region boundaries. This talk will also provide an overview of our recent developments in the design of materials for ultrasensitive biosensing. We are applying these nanomaterial-based approaches both in high throughput drug screening and to diagnose diseases ranging from cancer to global health applications.

Keywords: nanomaterials, regenerative medicine, biosensing.