Thesis Project Form

Title (tentative): Smart multi-compartment hydrogels for local delivery of chemotherapeutic drugs

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Description

Motivation and application domain
Design, fabrication and characterization of injectable hydrogels able to adapt to the geometrical features of the target site and to provide a controlled release of encapsulated drugs.

General objectives and main activities
Nano-in-micro particles conjugated to chemotherapeutic drugs will be included into a solid hydrogel matrix in order to provide containment and thus to avoid initial burst effect and control the drug release. The multicomposite systems will be designed, characterized and tested in vitro for their release, pharmacokinetics and cytotoxicity. The hydrogel matrix will be designed in the form of microspheres, in order to be easily injectable, and fabricated using biocompatible and biodegradable polymers.

Training Objectives (technical/analytical tools, experimental methodologies)
To gain practical experience in the development and engineerization of a multi-compartment hydrogel to overcome problems related to the in vivo release of chemotherapeutic proteins.

Place(s) where the thesis work will be carried out: DIBRIS, IIT

Additional information

Maximum number of students: 1