UNIVERSITÀ DEGLI STUDI DI GENOVA

ISTITUTO ITALIANO DI TECNOLOGIA

Università degli Studi di Genova – Istituto Italiano di Tecnologia

Corso di Dottorato "Scienze e Tecnologie della Chimica e dei Materiali"
Curriculum "Drug Discovery & Nanobiotechnologies"

Anno Accademico 2017-2018
Ciclo XXXIII

Research Themes

4 positions available with scholarship

1. Proteomics and metabolomics to investigate changes in biological pathways

Combined proteomics and metabolomics experiments might be a very promising way to elucidate changes occurring in a living system following administration of drugs, either small organic compounds or more complex molecules. The candidate should outline the current state-of-the art of proteomics and metabolomics sciences, commenting on the major challenges and difficulties associated with this analytical investigation. A particular attention should be devoted to mass-spectrometry based techniques for protein and metabolite identification and quantification. The candidate should also elaborate on current data analysis tools and outline the key aspects of the whole workflow.

IIT Research Line: D3 PharmaChemistry (PI: Tiziano Bandiera)

2. Immunomodulatory effects of nanomaterials.

Intrinsic properties of nanomaterials will be exploited to modulate immune cell responses. Specific nanoparticle functionalization will be tailored to modify the inflammatory response of leukocytes under experimental conditions.

IIT Research Line: Nanobiointeractions and Nanodiagnostics (PI: Pier Paolo Pompa)

3. Exploring nano-bio interactions for the development of new drug delivery systems

This research theme involves the study of uptake, fate, biopersistence/biotransformation mechanisms of nanomaterials in biological systems for applications in nanomedicine, diagnostics, and nanotoxicology. The activities span from synthesis and physico-chemical characterization of nanomaterials to quantitative analysis of nano-bio interactions.

IIT Research Line: Nanobiointeractions and Nanodiagnostics (PI: Pier Paolo Pompa)

4. Development of colorimetric nanosensors for POC and on-field diagnostics

This research theme will explore the combination of different nanomaterials with advanced biotechnology tools to achieve specific and sensitive assays with minimal instrumental requirements and colorimetric readout.

IIT Research Line: Nanobiointeractions and Nanodiagnostics (PI: Pier Paolo Pompa)