MICROFLUIDIC SYSTEMS FOR BIOMEDICAL APPLICATIONS

Microfluidic-based production of nanoscale drug delivery systems; investigation of the underlying mechanisms of formation; and development of microdevices (Micro Electro-Mechanical Systems, MEMS) for facilitating the intracellular delivery of bio-active molecules using ultrasonic waves (sonoporation).
Design and fabrication of biomimetic in-vitro models capable of reproducing the dynamics of fluid and species transport within biological systems, including bone and cartilage tissues.

GOALS
Design, fabrication and testing of microfluidic platforms for therapeutic applications.

INSTRUMENTS AND METHODS
Microfluidic devices, microfabrication, micromachining, cleanroom processing, soft lithography, thin film deposition.

SUBJECTS
Microfluidics, Material Science, Pharmaceutics.

WORKING GROUP
Claudio Nastruzzi
Elisabetta Esposito
Rita Cortesi

COLLABORATIONS
Dipartimento di Medicina Sperimentale (Università di Perugia)
Laboratoire de Biotechnologie Chimique (École polytechnique fédérale de Lausanne)
Dipartimento di Scienze Biomediche e Chirurgico Specialistiche (Università di Ferrara)
Department of Anatomy (University of South Florida)
Department of Materials (ETH, Swiss Federal Institute of Technology, Zurich)
School of Pharmacy and Pharmaceutical Sciences (Trinity College Dublin)
Translational Research & Microfluidics (Université Paris Descartes, Paris)
Bioengineering Sciences and Electromechanical Engineering research groups (University of Southampton)