

Micro-Nano-Bio Systems and Targeted Therapies Lab: key people



Leonardo Ricotti is Associate Professor of Bioengineering and Biorobotics at SSSA and head of the “Micro-nano-bio systems and targeted therapies” Lab at the BioRobotics Institute. He holds a M.Sc. course on “Micro-nano robotics and biomaterials” and a PhD course on “Microfabrication through soft lithography and SEM-AFM characterization”. He has supervised or co-supervised 10 PhD students, working on therapeutic micro-devices, biomaterials and artificial organs, and 30 M.Sc. theses on bioengineering topics. He carries out innovative research efforts at the interface between different disciplines, such as robotics and mechatronics, materials science, molecular biology and biotechnology and he aims at creating innovative (and potentially disruptive) “match points” between different disciplines. He is co-author of ~90 scientific publications (62 on ISI journals), 6 book chapters on micro-nano systems for biomedical applications. He is also inventor of 10 patents. He is Associate Editor of the IEEE Transactions on NanoBioscience and of the IEEE Transactions on Medical Robotics and Bionics. In 2012, he received the “Massimo Grattarola” award for the best PhD Thesis in bioengineering (Thesis title: “Development of bio-hybrid actuators”). In July 2014, he was awarded with the European Biomaterials and Tissue Engineering Doctoral Award. In 2018, he received regional and national prizes as member of the spin-off company Relief s.r.l. He currently coordinates an European project (ADMAIORA - ADvanced nanocomposite MAterials fOr in situ treatment and ultRASound-mediated management of osteoarthritis), funded in the H2020 framework.

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Lorenzo Vannozi is a technologist at SSSA, within the “*Micro-nano-bio systems and targeted therapies*” Lab of the BioRobotics Institute. In 2013, he received a Master degree in Biomedical Engineering at University of Pisa, with a thesis entitled “Design and development of a 3D system for bio-hybrid actuation” and in 2017 he obtained a PhD in Biorobotics, defending a thesis entitled “Novel actuated microsystems”. In 2019, he has become technologist in the “*Micro-nano-bio systems and targeted therapies*” Lab of the BioRobotics Institute. His research activity deals with the exploration of 3D microfabrication technologies, included 3D bioprinting, for bioengineering purposes, and the design, development and testing of drug delivery platforms for local therapies. He has an interdisciplinary approach involving materials science, mechatronics and molecular biology. He supported the teaching activity of Prof. Leonardo Ricotti within the M.Sc course on “Miniaturized therapeutic and regenerative technologies”, with practical classes on material synthesis and characterization. He is author or co-author of 17 scientific publications. In 2018, he received the “Julia Polak European Doctorate Award” from the European Society of Biomaterials committee. He is or has been involved in different Italian and European projects (ADMAIORA, MOTU, M2Neural and GeT Small), for which he provided important technical contributions.

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Lorena García-Hevia is a Postdoc at SSSA, within the “*Micro-nano-bio systems and targeted therapies*” Lab of the BioRobotics Institute.

She is a bachelor in Biology by the University of Oviedo and she has a MSc in Molecular Biology and Biomedicine. Lorena obtained her PhD in Molecular Biology and Biomedicine from the University of Cantabria (best thesis award and Juan María Parés Award). During her thesis she demonstrated the anti-proliferative, anti-migratory and pro-apoptotic effects of carbon nanotubes in vitro and anti-tumoral effects in murine cancer models.

She carried out a postdoctoral training at the Stephenson Cancer Center (USA) to investigate the anti-tumoral effects of gold nanoparticles in cancer cell spheroids. Then, she did her first post-doc at International Nanotechnology Laboratory (Portugal). Her research was focused on developing and validating strategies of selective magnetic hyperthermia therapies in different in vitro (cell culture, spheroids) and in vivo (mouse model) approaches.

She has around 24 contributions to conferences, she has participated / participates in 11 research projects and she is author or co-author of 14 scientific publications.

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Federica Iberite is a Ph.D. student in Biorobotics at SSSA, within the “Micro-nano-bio systems and targeted therapies” Lab of The BioRobotics Institute.

In 2017 she received a Master’s Degree in Genetics and Molecular Biology in Basic and Biomedical Research at “Sapienza” University of Rome, with a dissertation about the functional characterization of a novel long non-coding RNA involved in the regulation of Neurogenin2, a master gene of neural differentiation. During her university career, she received two grants for academic merits.

Her current research activity concerns the integration of living and non-living elements for the development of biohybrid actuators by exploiting muscle cells contraction ability. She is also investigating the effect of different mechanical stimuli on cell differentiation for regenerative medicine purposes.

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Francesco Fontana is a Ph.D. student in Biorobotics at The BioRobotics Institute of Scuola Superiore Sant'Anna. In 2017 he received the Master degree in Chemical Engineering at University of Salerno, with a thesis entitled "Configuration of a plant for supercritical CO₂ - assisted electrospinning". His research activity regards the development of an *in vitro* highly controlled combined stimulation system (low intensity ultrasounds plus electromagnetic pulses) of relevant cell lines for modelling neuropathies (in particular the Guillain-Barrè syndrome). The aim is to bring anti-inflammatory and regenerative effects. The second topic concerns the development and characterization of engineered nanocomposite hydrogels for cartilage regeneration.

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Sabrina Ciancia is an Assistant Researcher in Biorobotics at The BioRobotics Institute of Scuola Superiore Sant'Anna. In 2018, she received a Master's degree in biomedical engineering at University of Pisa, with a thesis on controlled and pulsatile drug delivery enabled by ultrasound. She was awarded with the "NearLab" prize by the National Bioengineering Group, for the best master thesis in the Neuroengineering and Medical Robotics field. Her research activity concerns the development of smart systems for controlled drug delivery and biomedical technologies for laboratory automation.

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Andrea Aliperta is a freelance computer graphics artist. In 2012 he graduated in architecture at the University of Florence. In 2018 he received a PhD in Architecture at University of Florence, and a PhD in Arquitectura, Edificación, Urbanística y Paisaje, at Polytechnic University of Valencia, with a research in the field of digital survey and digital analysis applied to Maya architecture. Is the author or co-author of 15 scientific publications in the field of digital documentation and dissemination of cultural heritage.

Since 2014 he collaborates with The BioRobotics Institute of Scuola Superiore Sant'Anna creating multimedia materials aimed at the dissemination of scientific projects.

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Angela Sorriento is a Ph.D. student in Biorobotics at The BioRobotics Institute of Scuola Superiore Sant'Anna.

In 2016 she received a Master's Degree in Biomedical Engineering at the University of Naples Federico II. Her thesis work was carried out at Maastricht Brain Imaging Center, Faculty of Psychology and Neuroscience of Maastricht University (the Netherlands), focusing on the analysis of Functional Magnetic Resonance Imaging (fMRI) data for discovering brain patterns in the sound categorisation process.

Her research activity concerns the development of smart medical devices for monitoring bone fracture healing. She mainly investigates the biomechanical and biological aspects of the bone regeneration process, based on the integration of engineering tools and physical principles (e.g. ultrasounds).

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Aliria Poliziani is an Assistant Researcher at The BioRobotics Institute of Scuola Superiore Sant'Anna. In 2016 she received a Master's Degree in Biomedical Engineering at the University of Pisa, with a dissertation about synthesis and acousto-mechanical characterization of nanocomposite materials for ultrasound phantoms and smart substrates for cell cultures. From February 2017 to May 2019 she worked as a Research Fellow at Istituto Italiano di Tecnologia in the project "BioImpedance Temporary Tattoo Electrodes" (BITTE). She has expertise in design and fabrication via inkjet technology of skin-contact polymeric electrodes for acquiring bio-impedance signals in humans. Her current research activity concerns the development of biomedical technologies for laboratory automation.

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Federica Campacci is a post-graduate fellow at The BioRobotics Institute of Scuola Superiore Sant'Anna. In 2018, she received a Master's degree in Biomedical Engineering at University of Pisa. Her dissertation concerned the development of a new nasal device after common surgical procedures on nose, in collaboration with important clinical experts of the ENT area.

Her current research activity regards the evolution of her thesis's project, including improvements in prototyping process and functional characterization of the device.

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Elena Dell'Amico is a freelance purchasing assistant.

She studied Marketing and Market Research at University of Pisa (Faculty of Economics and Management).

Since 2017 she received a fellowship at Azienda USL Toscana Nord Ovest for the balance sheet of some European Projects financed by European Social Fund 2014 -2020.

Since April 2019 she got the position as collaborator at the Biorobotics Institute of the Scuola Superiore Sant'Anna for the procurement of goods and services.

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