UNIMORE
UNIVERSITÀ DEGLI STUDI DI MODENA E REGGIO EMILIA

PhD Program in Molecular and Regenerative Medicine

Molecular and Regenerative Medicine Seminar Series (MRMss)

Muscle in motion: mimicking the human neuromuscular system in health and disease

Dr. Anna Urciuolo PhD

Wednesday, 28 May 2025, 2:45 PM
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Anna Urciuolo was trained as medical biotechnologist in 2007 and then in 2011 I concluded my PhD program in Bioscience, curriculum in genetics and developmental biology at the University of Padova (Italy). During her post-doctoral career in Italy and UK (University College of London, UCL) She had the opportunity to join and experience different research environments, embracing and incorporating into my research line basic biology and animal models, together with stem cell technology and bioengineering approaches. Her studies have been mainly focused on the role exerted by the environment and the extracellular matrix (ECM) to control stem cells and skeletal muscle in health and disease. After her first post-doc experience at the University of Padova, which studies were focused on muscular dystrophies associate to collagen VI mutations and skeletal muscle regeneration, she moved in UCL where she specialized in tissue engineering strategies (decellularized muscles) for the development of regenerative medicine strategies. In 2016 she moved back in Italy at the Department of Industrial Engineering of the University of Padova, where she developed a novel 3D bioprinting technology, named intravital 3D bioprinting. In 2018 she won as PI the STARS@ UNIPD grant (intramural grant supporting talented scientists) with the Dept. of Woman's and Children's Health of the University of Padova, and she started her independent career as PI. During this time, she focused on human induced pluripotent stem cell technology coupled with organoid and biomaterial science. Since the end of 2019 she is leading the Neuromuscular Engineering lab at the Pediatric Research Institute "Città della Speranza" (Italy). Since 2021, she have been working at the University of Padua as Associate Professor at the Dept. of Molecular Medicine and she is holding an honorary Lecturer position at the UCL (UK).

The Neuromuscular Engineering lab results from the multidisciplinary integration of different expertise in skeletal muscle and stem cell biology, extracellular matrix and biomaterial engineering. Her current research project aims at generating 3D models of human skeletal muscle equipped with a neuronal network. To do so, she integrates stem cell biology and extracellular matrix/biomaterial engineering to derive in the lab patient-specific multicellular microtissues and organoids that reproduce the human neuromuscular system. Such 3D in vitro models are used to mimic the structural/functional properties of human skeletal muscle and neuromuscular junction, for the identification of cellular and molecular players involved in neuromuscular genesis and maintenance in healthy and disease, with particular interest in neuromuscular disorders, dystrophies and cancer-induced muscle cachexia.

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