

2nd International Conference on**ADVANCES IN SKIN,****WOUND CARE AND TISSUE SCIENCE**

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**Pedro Morouço***Polytechnic Institute of Leiria, Portugal***BIOFABRICATION FOR CARTILAGE REGENERATION: ENGINEERING BIOMATERIALS AND PRINTING PROCESSES**

In the past decades, the world has witnessed tremendous breakthroughs in Tissue Engineering and Regenerative Medicine (TERM). However, we are still far from having an adequate procedure for printing and designing tailored implants, as bridging the anatomy with its physiology/function remains a paramount challenge to be solved. Due to its field-of-action, TERM gathers scientists, engineers and physicians in interdisciplinary teams using a variety of methods to construct biological substitutes. With this presentation, we will discuss the effects on boosting an effective synergy between mechanical engineering (including robotics automatization) and biomedical sciences. That will benefit TERM from the revolutionary steps in manufacturing at industry 4.0. Revolutionizing the available procedures for tissue repair and regeneration: bringing the robotics expertise to the biofabrication domain, it will be possible to promote an outstanding precision with the ability to develop stimuli-responsive implant, employing a combination of responsive materials and novel construct geometries to amplify the consequence of the material response. Accordingly, we will provide up-to-date examples on significant steps on tailored implants for cartilage regeneration, as well as demonstrate what we should expect in the near future. From micro-co-extrusion, to printing of elastomers, we will be able to mimic native tissue, according to the characteristics of the further patient (e.g. according with different degrees of Osteoarthritis). This work is supported by POCI-01-0145-FEDER-023423 co-financed by COMPETE2020 under the PT2020 programme, and supported by FEDER, and by the Portuguese Foundation for Science and Technology (FCT) through the projects UID/Multi/04044/2013 and PTDC/EMS-SIS/7032/2014.

Biography

Pedro Morouço is a very enthusiastic and provoking early-career researcher. Currently he is the Head of R&D Biofabrication Group at the Centre for Rapid and Sustainable Product Development – Polytechnic Institute of Leiria, Portugal. He is the Principal Investigator of “2bio4cartilage – Integrated intervention program for prevention and treatment of cartilage lesions”, and his research activity focuses, mostly, on products and processes engineering, aiming to bringing the gap between the lab and in vivo applications. In the last years, he has been invited to collaborate in several national and international projects, providing a significant income for the Biofabrication Group (currently has 8 grant-holders). Despite his young age, he has co-edited books, authored, co-authored more than 150 scientific works, member of the scientific committees in various conferences, member of the advisory board on TERM for Cambridge Scholars Publishing, editorial member in various journals, and keynote speaker for Stem Cell and Regenerative Medicine 2016(Manchester, UK) and Tissue Engineering and Regenerative Medicine 2016 (Berlin) & 2017 (Barcelona).

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