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A novel regenerative medicine approach to reconstruct the temporomandibular joint disk

Temporomandibular joint (TMJ) is a ginglymoarthrodial synovial joint located on both sides of the head, where the mandibular fossa of the temporal bone and the mandibular condyle articulate. A fibrocartilaginous disc between the fossa and the condyle absorbs shock, distributes load, decreases incongruence between joints bony structure and lubricates the surfaces of motion in the TMJ complex mechanical movements. Being the TMJ one of the profusely operational joints in the body (over 2000 periods of motion frequency per day), disorders affecting this joint are quite common. Facial pain induced by temporomandibular disorders has been reported in 9-13% of the general population (with a female: male ratio of 2:1), but only 4-7% look for treatment. These disorders have a considerable impact in the quality of life with chronic and persistent symptoms. The lack of available options illustrates the demanding need to develop optimized and personalized implants to treat TMJ disorders, namely when the TMJ disc needs to be replaced; which can only be achieved with an innovative approach that really mimic the native tissue. This presentation will focus on the developed strategy at CDRsp to overcome the mentioned problems. This work has the support from the Portuguese Government – Foundation for Science and Technology (PTDC/EMS- SIS/7032/2014).

Biography

Pedro Morouço is the Head of R&D Biofabrication Group at the Centre for Rapid and Sustainable Product Development – Polytechnic Institute of Leiria, Portugal, with a PhD specialized in Biomechanics. His research activity focuses, mostly, on products and processes engineering, aiming to bringing the gap between the lab and *in vivo* applications. He has Co-edited 3 books, authored and co-authored more than 100 papers published in book-chapters (n=15), international journals (n=40) and international conferences (n=55). He is Editorial Board Member in several international peer-review journals and was distinguished with the New Investigator Award 2014 from ISBS. He coordinates granted national and international research projects and is the Chairman of the CDRsp Advanced Courses on Regenerative Medicine and Workshops on Direct Digital Manufacturing for Medicine.

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