Biofabrication

Carlos Mota

Dr. Carlos Mota is an Assistant Professor in the Department of Complex Tissue Regeneration, MERLN Institute for Technology-inspired Regenerative Medicine, Maastricht University. In 2013, he was a postdoc at the department of Tissue Regeneration, University of Twente, the Netherlands where he developed, in partnership with Screvo B.V., a multiwell array platform for high content screening, targeting the effect of small molecules and biopharmaceutical in cancer therapeutics in vitro and in vivo.
Dr. Mota received his PhD in Biomaterials from the BIOS research doctorate school in Biomolecular Sciences at the University of Pisa, Italy, in March 2012. His doctoral studies were focused on the development of new approaches for the fabrication of polymeric scaffolds for Tissue Engineering applications. Furthermore, he was a researcher at the department of Neurosciences, University of Pisa, where he developed scaffolds for otology surgery applications. He is an elected board member of the International Society for Biofabrication and member of the European society of Biomaterials.
Currently, his main research interests are focused on biofabrication, bioprinting and additive manufacturing techniques for the development of tissue engineered constructs.

Paul Wieringa

Paul Wieringa, PhD, is an Assistant Professor leading the Neural Engineering Group in the Complex Tissue Engineering Department of the MERLN Institute at Maastricht University. His research focus is to better understand the role of peripheral nerves and tissue innervation in the pathology and repair of tissues and the biofabrication of 3D in vitro platform to facilitate this research. The ulimate goal is realize “neurogenic tissue repair” as a regenerative medicine strategy.

Originally from Canada, Paul obtained his Bachelors in Applied Science in the Integrated Engineering Program at the University of British Columbia, Vancouver. He then obtained his Master’s in Electrical Engineering (cum laude) in 2009 from the University of Twente, the Netherlands, with a specialization in Neural Engineering. During this time, he studied neurite growth within microfluidic channels and acquired knowledge relating to microfabrication and neuroscience and was successfully awarded a patent for a regenerative neural interface. This led him to complete a co-Ph.D. (2014, cum laude) in the development of a regenerative neural interface, beginning his studies into the development of 3D scaffolds for neural regeneration at Scuola Superiore Sant’Anna in Pisa, Italy, and later completing his degree at the University of Twente in the Tissue Regeneration Department. During this time, he gained expertise specifically in electrospinning, material science and advanced microscopy. This was followed by a post-doctoral fellowship from 2014 to 2017 at the MERLN Institute on technological development of electrospinning, melt electrowriting (MEW), and hybrid scaffolds to create specifically designed cell micro-niches for neural and regenerative medicine applications. In 2017, he was awarded the VENI personal grant by the NWO and was promoted to Assistant Professor in 2018. In addition, he is currently coordinating the BONE INTERREG-NWE project on melt electrospinning writing (MEW) technology development.

His current research aims to develop 3D in vitro platforms to explore the role of pancreas innervation in Diabetes as well as the impact of innervation on other tissues and pathologies. This involves the use of biofabrication techniques to develop 3D co-culture environments that combine peripheral neurons (sensory and autonomic neurons) with organoids and other tissue types, using the 3D design to preserve tissue function and the physiological nerve-tissue organization. These designed 3D co-culture systems aim to recapitulate the complex organization of natively innervated tissue. The synergistic combination of technology and biology found within the MERLN Institute allows for the development of these essential tools to study the impact of the peripheral nervous system on tissue health, disease, and regeneration.
In addition, research into nerve repair and biofabrication technology are also active areas of research. There are a number of ongoing collaborations to develop tailored 3D in vitro culture systems for other applications, including a recently awarded NWO OpenMind grant on the development of a materials-based strategy for spinal cord repair and the development of novel MEW technology within the NWE Interreg BONE consortium in order to generate 3D scaffolds for bone regeneration and repair.