Postdoctoral Researcher Positions & PhD Studentships in 3D Printing, Biomaterials and Tissue Engineering at Trinity College Dublin and the Royal College of Surgeons in Ireland

Positions: Postdoctoral Research Fellows and PhD Studentships

Project Title: Delivering Innovative Materials for Medical Devices

Project Description: This project will bring together a large, multidisciplinary team that will explore the use of emerging 3D Printing and 3D Bioprinting strategies for Tissue Engineering and the development of next generation medical devices. The project is part of the AMBER centre (http://ambercentre.ie), and will be located primarily at new dedicated bioprinting and additive manufacturing laboratories based in Trinity College Dublin. The project will explore integrating developments in the 3D printing of metals, biodegradable polymers and cell-laden bioinks to develop hybrid biological devices to treat a range of injuries and diseases.

Specific projects that will be undertaken include:

1. Combining synthetic polymers (PCL, PLGA) with different nanomaterials (e.g. nano-hydroxyapatite, silver, graphene) to generate a toolbox of printable materials with a broad range of mechanical and electrical properties and biological functionalities. Applications for these printed biomaterials will include bone, cartilage, airway, nerve and muscle tissue engineering.

2. The development of natural polymer based bioinks with tailored degradation kinetics capable of directing the differentiation of adult progenitor cells in vitro or in vivo. Applications for these bioinks will include meniscus and osteochondral tissue engineering.

3. The development of novel additive biomanufacturing strategies to tissue engineer hybrid implants for hip regeneration.

Applicants for the PhD studentships should have a degree in Biomedical, Chemical or Mechanical Engineering (or a related discipline), although motivated candidates with backgrounds in Biotechnology or the Biomedical Sciences will also be considered.

The ideal applicants for the postdoctoral researcher positions will have a PhD in Biomaterials, 3D Printing or Tissue Engineering. Experience in one or more of the following areas is particularly desirable: 3D printing of metals or polymers; Bioprinting; Cartilage or bone tissue engineering; Mesenchymal stem cells, Hydrogels for Tissue Engineering or Drug Delivery.

Start Date: From April 2018 onwards; positions will remain open until they are filled.

Application process: Please e-mail your CV (including the names of 3 referees) to Daniel Kelly (kellyd9@tcd.ie).
The Kelly Lab: Dr Daniel Kelly is the Professor of Tissue Engineering and Director of the Centre for Bioengineering (https://www.tcd.ie/bioengineering/) in Trinity College Dublin. He is also the leader of the biomaterials platform in AMBER, the Science Foundation Ireland funded materials science centre based in Trinity College Dublin. He is a past recipient of a Science Foundation Ireland President of Ireland Young Researcher Award, a Fulbright Visiting Scholar grant (at the Department of Biomedical Engineering in Columbia University, New York) and three European Research Council awards (Starter grant 2010; Consolidator grant 2015; Proof of Concept 2017). His lab focuses on developing novel tissue engineering and 3D bioprinting strategies to regenerate damaged and diseased musculoskeletal tissues. The successful applicant will join a dynamic, multidisciplinary lab consisting of 20 postdoctoral researchers and PhD students based in the Trinity Centre for Bioengineering. More information can be found here: http://www.mee.tcd.ie/regenerative/People/DKelly

The Hoey Lab: Dr David Hoey is an Associate Professor in Biomedical Engineering within the Department of Mechanical and Manufacturing Engineering and PI within the Trinity Centre for Bioengineering in Trinity College Dublin (TCD). He leads a musculoskeletal mechanobiology and biomaterials research group where his lab focuses on delineating novel mechanisms by which biophysical cues drive stem cell lineage commitment, and utilise this fundamental knowledge in cohort with advanced biofabrication techniques, to develop innovative materials for musculoskeletal regeneration. Dr. Hoeys lab is funded predominately through a European Research Council Starter grant. More information can be found here: https://www.tcd.ie/mecheng/staff/dahoey/

The Buckley Lab: Prof. Buckley leads a multidisciplinary research group in the School of Engineering at Trinity College Dublin and is a Principal Investigator within the Trinity Centre for Bioengineering (TCBE) and Advanced Materials Bioengineering Research (AMBER) Centre. The goal of the Buckley lab is to develop novel responsive biomaterials and cell-based strategies to regenerate damaged tissues to restore function using minimally invasive strategies (MIS). The main research interests of the Buckley lab include intervertebral disc, peripheral nerve, meniscus and cartilage regeneration, cellular microencapsulation for therapeutic regeneration, injectable biomaterials, 3D bioprinting, tissue cryopreservation, biomimetics and tissue decellularization strategies for innovative clinical intervention. For more information please visit our website: http://www.mee.tcd.ie/regenerative/People/CBuckley

The O’Brien Lab: Prof. Fergal J. O’Brien is Chair of Bioengineering & Regenerative Medicine, Deputy Director for Research & Innovation and heads the Tissue Engineering Research Group (TERG), the 2017 Irish Research Laboratory of the Year, in RCSI. He is PI and Deputy Director in the €58 million SFI-funded AMBER Centre and a funded investigator in the €50million CÚRAM Centre for Research in Medical Devices. He is also a co-founder of SurgaColl Technologies, which has translated 2 technologies for bone and cartilage repair from his lab to the clinic. O’Brien’s lab focuses on the development of natural polymer (such as collagen) biomaterial-based therapeutics for tissue engineering with target applications in bone, cartilage, cardiovascular, corneal, respiratory and neural tissues. A major focus of ongoing research has been to functionalise these scaffolds for use as delivery systems for biomolecules with a particular interest in the delivery of nucleic acids (pDNA, siRNA and microRNA) to enhance their therapeutic potential. More information can be found here: http://www.rcsi.ie/tissueengineering.