Applications are invited from suitably qualified candidates for the following position:

**Research Centre**
Biodesign Europe / Centre for Medical Engineering Research  
School of Mechanical & Manufacturing Engineering

**Post title**
Research Assistant Supporting Development of Genetically Engineered Load-Bearing Soft Tissues Inspired by Embryonic Tendon Development

**Post duration**
22 Month Fixed Term Contract

**Dublin City University**

Dublin City University (DCU) is a young, ambitious and vibrant university, with a mission ‘to transform lives and societies through education, research, innovation and engagement’. Known as Ireland’s ‘University of Enterprise’, DCU is a values-based institution, committed to the delivery of impact for the public good. DCU was named Sunday Times Irish University of the Year 2021.

DCU is based on three academic campuses in the Glasnevin-Drumcondra region of north Dublin. More than 18,000 students are enrolled across five faculties – Science and Health, DCU Business School, Computing and Engineering, Humanities and Social Sciences and DCU Institute of Education.

DCU is committed to excellence across all its activities. This is demonstrated by its world-class research initiatives, its cutting-edge approach to teaching and learning, its focus on delivering a transformative student experience, and its positive social and economic impact. The university continues to develop innovative programmes in collaboration with industry, such as the DCU Futures suite of degrees, which are designed to equip graduates with the skills and knowledge required in a rapidly evolving economy.

DCU’s pursuit of excellence has led to its current ranking among the top 2% of universities globally. It is also one of the world’s Top Young Universities (QS Top 100 Under 50, Times Higher Top 150 Under 100). In the Times Higher Education University Impact Rankings 2021, DCU ranked 23rd in
the world for its approach to widening participation in higher education and its ongoing commitment to eradicating poverty, while it ranks 38th globally for its work in reducing inequality and 89th globally for gender equality.

The university is ranked 23rd in the world and first in Ireland for its graduate employment rate, according to the 2020 QS Graduate Employability Rankings. Over the past decade, DCU has been the leading Irish university in the area of technology transfer, as reflected by licensing of intellectual property.

As part of this role the researcher will be required to participate in the DCU Research Career Framework. This framework is designed to provide significant professional development opportunities to Researchers and offer the best opportunities in terms of a wider career path.

**Background**

Biodesign Europe (https://www.dcu.ie/commsteam/biodesign-europe) is a recently established transatlantic scientific research institute that leverages the research infrastructure capacity and expertise at the ASU Biodesign Institute (https://biodesign.asu.edu/) and DCU’s research centres. The focus of Biodesign Europe is to harness the natural design rules of life on this planet and translate nature-inspired solutions to complex grand challenges in health, sustainability and security for global positive impact and driving a sustainable international economy.

MEDeng (https://www.dcu.ie/medeng) is a key research centre at Dublin City University focused on translating engineering and materials research into healthcare solutions. The centre has six overarching research themes based at the interface of materials science, engineering and biology - providing the underpinning fundamental research to facilitate the stratified clinical and industrial framework for the development of medical devices and implants for tissue repair and regeneration. Projects are often conducted in close collaboration with leading Irish and international companies and research organisations.

**The Project**

Biodesign Europe / Centre for Medical Engineering Research (MEDeng) is currently offering a 22-month Science Foundation Ireland funded Research Assistant position, as part of a US-Ireland Tripartite funded project, to develop genetically engineered load-bearing soft tissues inspired by embryonic tendon development.

The human body contains numerous soft tissues that sustain large tensile loads, including tendons, ligaments, knee meniscus, and the annulus fibrosus of the intervertebral disc. Given their importance in mobility, high incidence of failure, and limited healing capacity, there is strong scientific interest in developing a biomaterial that can replicate the mechanical and biological function of these tissues. Nevertheless, no engineered material has been able to match the performance of even the simplest tensile load-bearing soft tissue (e.g., tendon/ligament). Thus, the main project objective will be to identify the structural changes and biological mechanisms that drive normal embryonic tendon development and to use this knowledge to enhance the maturation of tissue-engineered tendon constructs via nanoparticle gene delivery.
The Role
This position will begin in February 2023 and offer an exciting job opportunity where the successful candidate will have access to competent technical, infrastructural and administrative support and the opportunity to evolve a multi-faceted skill set. The successful candidate will join an international team of PhD students and postdoctoral researchers and will work in close collaboration with researchers from Trinity College Dublin, Queen’s University of Belfast and Pennsylvania State University. The Research Assistant will be based in Biodesign Europe and MEDeng at Dublin City University and will work under the supervision of Prof. Nicholas Dunne and Dr. Tanya Levingstone.

Principal Duties and Responsibilities
Reporting to Prof. Dunne and Dr Levingstone, the duties and responsibilities attached to the post include, but are not restricted to, the following:

- Conduct a specified programme of research under the supervision and direction of Prof. Dunne and Dr Levingstone.
- Identification, polymer synthesis, experimental characterisation, optimisation and benchmarking of new hybrid material systems for application in the repair of tensile load-bearing soft tissue.
- Conduct, with a high degree of technical competence, a specified programme of research and scholarship under the supervision of Prof. Dunne and Dr Levingstone.
- Disseminate research outcomes in which they are engaged including funder reporting, industrial demonstrations and publishing in high-quality peer-reviewed journals of international standing.
- Support Prof. Dunne, Dr Levingstone and Biodesign Europe/MEDeng in the development and implementation of the broader research programme.
- Develop research proposals for specific national and international funding calls.
- Support graduate research students associated with Biodesign Europe/MEDeng group.
- Take responsibility for report generation, and administration associated with site visit preparation and other administrative work associated with the programme of research and the research group.

Qualifications, Skills and Experience Required
Applicants should have an undergraduate degree in a relevant discipline (Biomedical Engineering, Materials Science, Pharmacy, Biological Science or a cognitive discipline) along with evidence of knowledge of biomaterials development, characterisation and experimental testing. Additionally, an understanding of Design of Experiment (DoE) methods and experience with Design Expert and SPSS Statistics would be an advantage.

- The candidate should have excellent analytical and problem-solving skills.
- Excellent communication skills as well as knowledge of the relevant academic literature.
- In addition, candidates should have a high level of interpersonal skills.
• Team working skills, report writing, time management skills and an ability to work to deadlines.

Desirable attributes include:

• Experience in industry-led research, presentation skills and academic article writing skills.
• It is desirable that the candidate has relevant experience in the following areas:
  - Biomaterials synthesis and physiochemical characterisation.
  - Mechanical testing and analysis.

**Essential Training**
The postholder will be required to undertake the following essential compliance training: Orientation, Health & Safety and Data Protection (GDPR). Other training may need to be undertaken when required.

_Dublin City University is an equal opportunities employer._

_In line with the Employment Equality Acts 1998 – 2015, the University is committed to equality of treatment for all those who engage with its recruitment, selection and appointment processes._

_The University’s Athena SWAN Bronze Award signifies the University’s commitment to promoting gender equality and addressing any gender pay gaps. Information on a range of university policies aimed at creating a supportive and flexible work environment are available in the DCU Policy Starter Packs._