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OPEN PhD POSITION in Innovative Training Networks

We are looking for a dedicated and highly motivated Early Stage Researcher (ESR), who will join our team to build multidisciplinary expertise for fostering future medical solutions applied to tendon repair and diagnosis.

P4 FIT description (4 years MCSA-ITN-EJD project starting January 2021)

Perspectives For Future Innovation in Tendon repair (P4 FIT) fosters to build a new generation of ESRs with adequate skills to explore non-conventional therapeutic and diagnostic solutions by exploiting the technological advances in nanomedicine. The translation of innovative nanodevices carried out on integrated pre-clinical and vet/human clinical settings are expected to produce solid evidence-based datasets able to reduce fragmentation still limiting the impact of biomedical discoveries and to offer a unique opportunity for identifying new predictive biomarkers through the use of AI and deep learning data analysis. Working across disciplines and sectors, **P4 FIT** will foster the 15 ESRs to be creative, critical, autonomous intellectual risk takers at the frontiers of research with the R&I mind-set necessary for thriving careers. **P4 FIT** will allow to fill the EU gap in tendon healthcare, building up a generation of researchers able to develop nano-based biomedical devices by integrating biology advances to technology innovation, and to computational revolution. The **P4 FIT** cross-disciplinary approach includes 6 beneficiaries and 21 partner organizations (10 academic and 11 non-academic) from across Europe.

ESR7 –FAU (double degree with University of Teramo) Innovation in tendon biomimetic scaffolds production

Objectives: To use a benign solvent system to fabricate composite tendon biomimetic scaffolds through an electrospinning approach.

Expected Results: (1) Combine different polymers (synthetic and/or natural-derived polymers), by using benign solvent system for the electrospinning process to fabricate innovative tendon biomimetic composite scaffolds. (2) Morphological, chemical and biophysical characterisation of the developed scaffolds. (3) Explore the biomechanical functionality ensuring the required non-linear behaviour and load transmission competence of the composite tendon biomimetic scaffold. (4) Biocompatibility and teno-inductive in vitro tests of the developed scaffold using stem cells (AECs) and bio-engineering approaches under static and dynamic (using bioreactor system) culture conditions. (5) Optimize imaging procedures to acquire high-resolution, high-content, 3D representations of collagen and fibrin fibrillar structure on bio-hybrid scaffolds using advanced microscopy techniques (SHIM and TPEM).

Keywords: Biomaterials, Tissue Engineering, Tendon, Stem Cells, Amniotic Epithelial Stem Cells, Biocompatibility, Teno-lineage differentiation, Bioreactors, Imaging, Biomedical Engineering

Applicant Profile: Master level in engineering, biology, biotechnology, chemistry, or related fields, ideally with a background in biology, materials science, biotechnology, biomedical engineering, biochemistry or tissue engineering. Excellent communication skills (both written and oral) in English.

PhD main locations: The recruited ESR is given the opportunity to conduct 3-years of PhD studies at [Institute of Biomaterials, Friedrich Alexander University Erlangen-Nuremberg \(FAU, Germany\)](#) and at [Faculty of Bioscience, Agri-Food and Environmental Technology, University of Teramo \(UNITE, Italy\)](#), and secondments at [University of Minho \(Portugal\)](#) and at [Ansabere Surgical S.L. \(Spain\)](#).

Double PhD Tutors: Prof. A. R. Boccaccini (Doctoral Programme in Engineering (Biomaterials), FAU), Prof. B. Barboni and Prof. V. Russo (Doctoral Programme in Cellular and Molecular Biotechnologies, UNITE).

Main contacts:

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More details about P4 FIT project, requirements for the candidates and recruitment procedure:

www.p4fit.eu/jobs