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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.

ESR11 – KU (double degree with University of Salerno)

Extracellular vesicles intelligent stem cell delivery strategy for tendon therapeutic application

Objectives: To mimic the physiological mechanisms involved in the process of tenogenesis promotion through inductive influence of bioactive molecules via extracellular vesicles (EVs) functionalized 3D-scaffolds.

Expected Results: (1) Comparison of tenogenic activities, under 2D and 3D culture conditions, of hBM-MSCs vs. placental membrane-derived stem cells vs. tenogenic derived stem cells. (2) Characterization of EVs production of the different stem cell populations before and after tenogenic differentiation. (3) Modulation of EVs release under different culture conditions (e.g., oxygen tension, biomechanical stimulation). (4) Demonstrate the cell-instructive effect of EVs after insertion in hydrogel micro-cavity compartments (produced by University of Helsinki). (5) Evaluation of tenogenic impact of hydrogel enriched EVs micro-cavity during the *in vitro* process of stem cell tendon differentiation.

Keywords: Tendon, Stem Cells, Tissue Engineering, Biomaterials, Bioreactors, Imaging, Biomedical Engineering.

Applicant Profile: Master level in biology, chemistry, engineering or related fields, ideally with a background in biology, materials science, biotechnology, biomedical engineering, biochemistry, tissue engineering, animal studies, or immunotherapy. 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 [School of Pharmacy and Bioengineering, University of Keele \(United Kingdom\)](#) and [Department of Information and Electrical Engineering and Applied Mathematics, University of Salerno \(UNISA, Italy\)](#), and secondments at [Faculty of Bioscience, Agri-Food and Environmental Technology, University of Teramo \(UNITE, Italy\)](#) and at [Fidia Farmaceutici S.p.A. \(Italy\)](#).

Double PhD Tutors: Prof. N. Forsyth (Doctoral Programme in Cell and Tissue Engineering, KU) and Prof. G. Della Porta (Doctoral Programme in Translational Medicine, UNISA).

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

www.p4fit.eu/jobs