1. *Interested institution:*

Universitat Politècnica de Catalunya
c/ Jordi Girona 31, 08034 Barcelona (Spain)
http://www.upc.edu

Biomaterials, Biomechanics and Tissue Engineering Group
School of Industrial Engineering of Barcelona (ETSEIB)
Dept. Materials Science and Metallurgy
Avda Diagonal. 647, Pabello E, 08028 Barcelona (Spain)
https://www.upc.edu/cmem/investigacion/Biomateriales%20biomecanica%20e%20ingenieria%20de%20t**ejidos**

2. *Brief Description of the Institution*

The Universitat Politècnica de Catalunya (UPC) is a large University consisting of 23 faculties specialised in **engineering, architecture and science**. In 2013-14 it counted more than 28k bachelor students, and 5k master and doctoral students, with a turnover (2013) for R&D projects of 49M € and a strong business partnership.

In spite of its highly applied character, UPC is also strong in research. For instance, it has wide experience in European Projects, having managed 144 projects in FP6, 15 of them coordinated, and currently managing about 164 projects for FP7, 22 of them as coordinators. Moreover, it has a large experience with Marie Curie Actions, where up to now UPC has managed 30 projects, 21 of them coordinated or monopartners. So far for the Horizon 2020 programme (2014-2020) UPC has been granted with 23 projects, 7 of them as coordinators.

3. *Please tick the areas of research (as established in Marie Sklodowska Curie Actions)*

☒ Chemistry (CHE)	☐ Environmental Sciences and Geology (ENV)
☐ Social Sciences and Humanities (SOC)	☒ Life Sciences (LIF)
☐ Economic Sciences (ECO)	☐ Mathematics (MAT)
☐ Information Science and Engineering (ENG)	☒ Physics (PHY)

4. *Research / Project Description*

The Biomaterials, Biomechanics and Tissue Engineering Group (BBT) is one of the leading groups in its area, being intrinsically interdisciplinary. It is composed of around 30 researchers including chemists, materials engineers, physicists and biochemists. Only in the last 5 years the group has reported more than 100 JCR papers and developed a number patents. The group belongs to the the Biomedical Engineering Research Center (CREB), to the Research Center in NanoEngineering (CRnE), to different research networks and has been awarded recognitions to research.

The main aim of BBT is to develop biomaterials for regeneration and/or repair of functional tissues and organs. That aim requires the design of materials able of modulating the biological response of the receptor tissue, yielding in some cases regeneration and neoformation of tissues and, in others, a perfect biomaterial integration and recovery of the lost functionality. As an example of the former, bone biomaterials are designed, capable of progressively resorbing to produce new formed tissue. An example of the latter would be dental implants substituting the dental root and allowing fixing prosthesis, with recovery of the lost functionality.

Three main research lines can be highlighted:

1. Materials for bone regeneration: This research line focuses in the design and development of calcium phosphate-based materials with enhanced biological functionalities, able to induce and facilitate biological processes which can result in regeneration of the lost bone. Functional biomaterials, based on calcium phosphate cements or composites, obtained by low temperature routes that allow mimicking the natural bone mineral are the main target. This methodology permits also the incorporation of synthetic or natural polymers, and their functionalisation with biologically active molecules and drugs. The development of novel injectable self-setting calcium phosphate based foams and scaffolds through different processing routes, such as 3D printing are envisaged.

2. Metallic Biomaterials: The main goal for this line is producing and characterising Ti alloys based on Ti-Nb-Hf-Zr system with low elastic modulus and/or exhibiting shape memory effect for biomedical applications. A second objetive is the Surface Biofunctionalization: improvement of the tissue response in biomaterials treated to obtain a biofunctionalized surfaces to confer them with improved bone repair and regeneration, or with antimicrobial properties.

3. Plasmas for Biomedical Applications: This topic focuses on the Medical and Biomedical applications of Atmospheric & Low pressure plasmas, mainly for bone therapies. This includes a first objective dealing with surface treatment of calcium phosphate and metallic biomaterials as described in the previous lines, to enhance osteointegration, adsorption of biological cues, modulation of drug delivery. A second objective focuses on the interactions of plasmas with liquids, cells and the bone environment to improve current therapies.

Interested Marie S. Curie Fellows, which should be candidates of excellence; would work on a project dealing with any of the three of the previous lines, or a combination therein.

5. Who can apply?

At the deadline for the submission of proposals (10/09/2015), researchers (*):

- shall be in possession of a doctoral degree or have at least four years of full-time equivalent research experience.
- must not have resided or carried out their main activities in the country of Spain for more than 12 months in the 3 years immediately prior to the abovementioned deadline.
- Recommended skills / experience in the research lines of the group or related areas.

6. Contact person

Cristina Canal, PhD.
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Materials Science and Metallurgy Department
Technical University of Catalonia (UPC)
Avda. Diagonal 647, 08028 Barcelona (Spain)
Tel. +34 934010711
email: cristina.canal@upc.edu

7. Applications: documents to be submitted and deadlines

CV of the candidate
Letter of motivation
Contact of three potential referees
Deadline: 30th June 2015
Contact by email: cristina.canal@upc.edu

Please note that:

- Deadline of the next call for proposals for Marie Sklodowska – Curie Individual Fellowships is **September, 10th 2015.**
- Oficina Europea is only responsible for the display of the expressions of interests received by the institutions; further contact and information requests will take place directly between the host institutions and the interested researchers.

(*) Further details on the Call and additional eligibility criteria can be found at the Participants´Portal