MASTER PROJECT

COURSE 23/24

MASTER DE FÍSICA DE LA MATERIA CONDENSADA Y LOS SISTEMAS BIOLÓGICOS

(ESPECIALIDAD BIOFÍSICA)

Title:

DEVELOPMENT OF HIGH PERFORMANCE REGENERATED SILK FIBERS FOR THE CONSTRUCTION OF VASCULARIZED TISSUE SCAFFOLDS

Laboratory:

BIOMATERIALS AND REGENERATIVE ENGINEERING LAB – CENTRO DE TECNOLOGÍA BIOMÉDICA (UNIVERSIDAD POLITÉCNICA DE MADRID).

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Summary:

Regenerated silk fibers combine unique characteristics of biocompatibility and excellent mechanical properties that make them one of the biomaterials of greatest impact for the development of new therapies in the area of Tissue Engineering. The possibility of functionalizing these fibers also makes these materials an active element that guides and modulates the organism's response to the implant. In this context, the objective of this Master Thesis proposal will be the development of high performance regenerated silk fibers functionalized by highly selective procedures. The range of molecules with which the fibers will be functionalized will include, among others, cell adhesion proteins and antibodies. The student will be trained in the production and functionalization of the fibers in the facilities of the Centro de Tecnología Biomédica (UPM). This Master Project is supported by the European Project THOR (building vascular networks and Blood-Brain-Barriers through a Biomimetic manufacturing Technology for the fabrication of Human tissues and Organs).

Referencia:

Straining flow spinning of artificial silk fibers: a Review (https://www.mdpi.com/2313-7673/3/4/29).