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ESR Project Information Sheet

Project title	Combined nano- and micro-technologies to treat diseases affecting the back of the eye
Reference number	ORBITAL_ESR_2019_Project 12
Host Institution/University	Pharmaceutical Innovation in Ophthalmology (UCM Research Group 920415). Complutense University.
Academic institute of registration	Complutense University
Supervisor(s)	Rocío Herrero Vanrell , Irene Teresa Molina Martinez, Irene Bravo-Osuna, Vanessa Andrés-Guerrero, Zubair Ahmed, McLoughin, J Hackarainen.
Department / School	Department of Pharmacy and Pharmaceutical Technology
Duration	36-month employment contract provided and ESR enrolled on PhD which may take longer than 3 years. ESR will be required to self-fund after the initial 36 months
Status: Full-time / part-time	Full time
Funding information	Funding agency: H2020-MSCA-ITN-2018
Early Stage Researcher Allowances:	Living allowance: €37,434 p/a + mobility allowance of €7,200 p/a + family allowance where applicable (all values before tax and social security payments) Fees: PhD fees as per university
Closing date and time	5 p.m. (CET) Tuesday 26 th November, 2019
Commencement date	Immediate start

Post summary

Diseases of the posterior segment of the eye are increasing considerably, in part due to an ageing population. Among them, age-related macular degeneration, diabetic retinopathy and glaucoma are the most common cause of blindness, affecting the retina. Treatment of posterior segment diseases involves regular injections into the eye, which is associated with significant patient discomfort and potentially serious side effects, including bleeding, infection and retinal detachment. These diseases are characterized to be chronic and multifactorial and require delivery of therapeutic concentrations of the active substances for a long period of time. As such, there is an unmet clinical need for the development of new and improved drug delivery systems to treat these pathologies. This project aims to address this challenge through the development of novel nano- and micro-technologies and their combination as an alternative to multiple intraocular injections for the treatment of retinal disorders.

The objective of this ESR project is to evaluate the usefulness of different approaches (nano- and micro-particles) and their combinations as therapeutic tools in the treatment of chronic and multifactorial diseases affecting the back of the eye.

Brief training outcomes:

- Development of the preparation method of microspheres attending to the properties of the potential active substances (biotechnological products and low molecular weight substances).
- Validation of the technique employed for quantification of the active substance/s.
- Preparation and characterization of nanoparticles/microparticles and their combinations.
- Preparation and *in vitro* characterization of the combined drug delivery systems.
- Optimization of formulations.
- *In vivo* characterization of the optimized drug delivery formulations
- Industry experience
- Analysis of data

Standard duties and responsibilities of the ESR

For the 36 months of employment contract the ESR will be required to work exclusively on the MSCA programme.

In all cases, all duties and responsibilities will be clearly outlined in the researchers Personal Career Development Plan, as determined in the early stages of the project between the ESR and their supervisory committee.

Person specification

Qualifications

Essential

Applicants should hold or expect to attain grade or master in pharmacy (at least 300 ECTS).

Knowledge & Experience

Essential

- Research project carried out in the above discipline.
- Demonstrated knowledge of at least three of the following: pharmaceutical formulation development, drug delivery, cell culture/molecular biology, nanotechnology.

Desirable

Work placement undertaken in an industry related to the above discipline.

Skills & Competencies

Essential

- Applicants whose first language is not Spanish or English must submit evidence of competency in Spanish or English.
- Evidence of interest, aptitude and research experience in the above discipline.

Further information

For any informal queries, please contact Dr. Rocío Herrero Vanrell +34 91 5646043 or by email on rociohv@ucm.es

For queries relating to the application and admission process please contact Dr Laurence Fitzhenry at orbital@wit.ie or by telephone at +353 (0)51 302624.

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