

ESR Project Information Sheet

Project title	Design and development of soft contact lenses for diabetic eye
Reference number	ORBITAL_ESR_2019_Project 1
Host Institution/University	Universidade de Santiago de Compostela
Supervisor(s)	C. Alvarez-Lorenzo (Supervisor); A. Concheiro, A.P. Serro; L. Jones (Academic co-supervisor); G. Carracedo (Non-academic supervisor)
Research Group	R+D in Drug Dosage Forms and Drug Delivery Systems, USC
Department / School	Department of Pharmacology, Pharmacy and Pharmaceutical Technology, School of Pharmacy
Duration	36-month employment contract provided and ESR enrolled on 4-year structured PhD. 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: Enrolment in the USC PhD Program
Closing date and time	5 p.m. (CET) Friday 28 th June, 2019
Commencement date	2 nd September 2019

Post summary

Diseases of the posterior segment of the eye are increasing considerably, in part due to an ageing population. One such disease, Age-related macular degeneration (AMD), the most common cause of blindness in patients over sixty, accounts for almost 10% of blindness worldwide. Its predicted global incidence for 2020 is 196M, rising to 288M in 2040. Typical treatment involves regular injections into the eye, which is associated with significant patient discomfort and potentially serious side effects, including bleeding, infection and retinal detachment. As such, there is an unmet clinical need for the development of new and improved drug delivery techniques to treat this and similar diseases of the posterior segment of the eye. This project aims to address this challenge through the design of hydrogel contact lenses suitable for loading and release of therapeutic amounts of drugs useful for the prevention or treatment of deleterious effects due to sorbitol accumulation, vascular proliferation and inflammatory conditions typical of diabetic eyes. Research and experimental work will involve the screening of suitable monomers for contact lenses with affinity for the target drugs; characterization of the obtained hydrogels regarding their optic properties, oxygen permeability, swelling, and ability to host/release drugs; pre-clinical evaluation of ocular toxicity and corneal permeability of the released drug; strategies for the optimization of the formulations; and strategies for scale-up and in vivo assessment in animal models.

The main phases of the research can be summarised as follows:

- Identification of monomers and hydrogel synthesis protocols for obtaining contact lenses that can host and release active substances to the ocular structures. The contact lens is expected to act as an efficient depot for the sustained release of drugs on the ocular surface, improving ocular bioavailability.

- Preclinical evaluation of the developed contact lenses. The performance of the designed drug-eluting contact lenses will be characterized in terms of main physical/physicochemical parameters required for contact lenses, and also of ability to host drugs and release them in contact with ocular tissues. Strategies for the optimization of the formulations, scale-up and in vivo assessment in animal models will be implemented.

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, as a minimum of 7/10, or equivalent, in Chemistry subjects, Biomedical Science, Materials Science or related area.

Knowledge & Experience

Essential

- Research project carried out in one of the above disciplines
- A demonstrated knowledge of at least two of the following: pharmaceutical formulation development, drug delivery, cell culture/molecular biology, nanotechnology, polymerisation techniques
- Excellent communication and organisation skills
- Willingness and ability to work in a multi-disciplinary team and multicultural environment

Desirable

- Participation/attendance to international meetings/workshops

Skills & Competencies

Essential

- Applicants whose first language is not English must submit evidence of competency in English, preferably B2 level or equivalent.
- Evidence of interest, aptitude and research experience in the above disciplines

Further information

For any informal queries, please contact Prof. Carmen Alvarez-Lorenzo at carmen.alvarez.lorenzo@usc.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.

Website: www.orbital-itn.eu

The Institute may decide to interview only those applicants who appear from the information available, to be the most suitable, in terms of experience, qualifications and other requirements of the position.



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