ESR Project Information Sheet

Project title	Intrascleral Implants for Posterior Segment Drug Delivery
Reference number	ORBITAL_ESR_2019_Project 3
Host Institution/University	Queens University Belfast (QUB)
Supervisor(s)	Dr Raj Thakur (Supervisor, QUB), Ryan Donnelly (Co-supervisor, QUB), B. Sarramago (Co-supervisor, Instituto Superior Técnico), T.Loftsson (Co-supervisor, University of Iceland)
Research Group	Ocular Drug Delivery (OcDD)
Department / School	School of Pharmacy
Duration	36-month employment contract provided and ESR enrolled on 3-year PhD. ESR will be required to self-fund if required after the initial 36 months
Status: Full-time / part-time	Full-time
Funding information	Funding agency: H2020-MSCA-ITN-2018
Early Stage Researcher Allowances:	Sterling equivalents to be paid to ESR and will be monitored for exchange rate every 6 months. Living allowance: €54,857 p/a + mobility allowance of €7,200 p/a + family allowance where applicable (**all values before tax and social security payments**) Tuition fees are covered by the University
Closing date and time	5 p.m. (CET) Friday 28th June, 2019
Commencement date	2nd September 2019

Post summary

Chronic retinal diseases are the leading contributor to visual impairment and blindness that are potentially the most devastating health problem worldwide. The World Health Organization estimates that globally about 285M people are visually impaired, of which 39M are blind and 246M have low vision. Diseases that originate in the posterior segment (PS) or back of the eye lead to permanent loss of vision if left untreated and account for the majority of blindness, such as in age- related macular degeneration (AMD), diabetic retinopathy (DR), diabetic macular edema (DME). Current treatment of AMD involves the direct intravitreal injection of aqueous formulations of anti-vascular endothelial growth factors known as anti-VEGF (e.g. Lucentis®, Eyelea® & Avastin®) in the eye. However, this is not a desirable method of drug delivery for several reasons: the need for frequent injections (every 4-8 weeks), significant tissue trauma, short half-lives of injected biologics, uncomfortable and painful to patients, requires professional training, causes rise in intraocular pressure (IOP), severe injection-related infections (e.g. endophthalmitis, hemorrhage, and cataract), mechanical injury to the lens and retina, and higher costs. This project aims to address this challenge by developing localised and sustained release intrasscleral implants for improved drug delivery to the PS of the eye. We will be fabricating micron-sized biodegradable and long-acting implants for localised delivery of drug molecules within the scleral tissue. This project focuses on the design, fabrication, physicochemical/mechanical characterisation, and in vitro/ex vivo/in vivo evaluation of the implants for the PS drug delivery applications. The student will be working on this multidisciplinary and collaborative project

(with QUB, IST, & UoI), with a wide-ranging expertise in area of formulation, bioprinting, chemical, biomedical, analytical, industrial and preclinical expertise.

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

- To select and characterise candidate materials for implant fabrication
- To develop and validate analytical/bioanalytical techniques for quantification of drug molecules
- To investigate biodegradation, biocompatibility and bioactivity of drug-loaded implants in in vitro and ex vivo
- To test safety and efficacy in in vivo models

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 a 2:1 Honours degree, or equivalent, in pharmacy, pharmaceutical science, pharmaceutical technology, Chemistry, Materials Science, Analytical Chemistry, Biomedical Science, Polymer Chemistry or related area.

Applicants should hold or expect to attain Master's degree in pharmacy, pharmaceutical science, pharmaceutical technology, Chemistry, Materials Science, Analytical Chemistry, Biomedical Science, Polymer Chemistry or related area.

Evidence of an IELTS* score of 6.0, with not less than 5.5 in any component is required (*taken within the last 2 years) is required.

Knowledge & Experience

Essential

- Research project carried out in one of the above disciplines
- A demonstrated knowledge of at least three of the following: pharmaceutical formulation development, drug delivery, pharmaceutical analysis, pharmaceutical analysis, polymer synthesis, characterisation

Desirable

Work placement undertaken in an industry related to the above disciplines

Skills & Competencies

Essential

- Evidence of interest, aptitude and research experience in the above disciplines

Further information

For any informal queries, please contact Dr. Raj Thakur on +44 (0) 28 9097 5814 or by email on r.thakur@qub.ac.uk

For queries relating to the QUB admission process please contact the Postgraduate Admissions Office via email Postgrad.Admissions@qub.ac.uk and immigration@qub.ac.uk or telephone +44 (0)28 9097 5082.

Use Website links:

http://www.qub.ac.uk/Study/PostgraduateStudy/

www.qub.ac.uk/sites/iss/

www.orbital-itn.eu

For queries relating to the ORBITAL 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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