UNIVERSITY OF ICELAND

ESR Project Information Sheet

Project title	Cyclodextrin nanotechnology: drug delivery to the posterior segments of the eye.
Reference number	ORBITAL_ESR_2019_Project 11
Host Institution/University	University of Iceland
Supervisor(s)	Prof. Hakon Hrafn Sigurdsson (PI), Prof. Carmen Alvarez-Lorenzo, Prof. Sara Nicoli, Prof. Thorsteinn Loftsson, Dr. Paolo Gasco.
Research Group	Cyclodextrin Drug Delivery Research Group
Department / School	Department of Pharmaceutical Sciences
Duration	36 month employment contract provided and ESR enrolled on 3 year structured PhD
Status: Full-time / part-time	Full time
Funding information	Funding agency: H2020-MSCA-ITN-2018
Early Stage Researcher Allowances:	Living allowance: €45,243.72 + mobility allowance of €7,200 p/a + family allowance where applicable (**all values before tax and social security payments**) Fees: € 545 per year.
Closing date and time	5 p.m. (CET) Friday 28th June, 2019
Commencement date	2nd September 2019

Post summary

Diseases of the posterior segment of the eye are increasing considerably, in part due to an ageing population. 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.

The main objective of the project is to develop a novel γ-cyclodextrin based solubilizing nanoparticles (SNPs) containing a kinase inhibitor in aqueous eye drops. Furthermore, the drug pharmacokinetics of a the kinase inhibitor will be determined, both *in vitro* and *in vivo,* as well as the biodegradation of the SNPs.

Such aqueous eye drops could greatly improve patient comfort and reduce the need for invasive methods to treat ocular diseases in the posterior part of the eye. The project is transdisciplinary in nature, incorporating chemical, biomedical, polymeric, industrial and clinical expertise.

Expected results are:

- Development of biodegradable γ-cyclodextrin-based SNPs for topical delivery of kinase inhibitors to the eye.
- Dissociation profile of the SNPs and degradation profile of y-cyclodextrin in simulated tear fluid and in an animal model.
- Pharmacokinetic profile of a model kinase inhibitor in several eye tissues after administration of the drug in SNPs.

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 Chemistry, Pharmacy, Materials Science, Analytical Chemistry, Organic Chemistry, Biomedical Science, Polymer Chemistry 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, analytical chemistry, nanotechnology

Desirable

Work placement undertaken in an industry related to the above disciplines

Skills & Competencies

Essential

- Applicants whose first language is not English must submit evidence of competency in English.
- Evidence of interest, aptidude and research experience in the above disciplines

Further information

For any informal queries, please contact Prof. Hakon Hrafn Sigurdsson on +354 8992252 or by email on hhs@hi.is

For queries relating to the university admission process please contact Prof. Hakon Hrafn Sigurdsson on +354 8992252 or by email on hhs@hi.is

For queries relating to the application 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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