

RenalToolBox – Project Description

ESR Number:	ESR6	Host:	LIVUNI
Project Title:	Innovative MRI and multi-modal strategies for evaluating the safety and efficacy of regenerative medicine therapies.		
Research Field:	Biological/Biomedical Sciences		
Contact Person:	Dr Raphaël Lévy, University of Liverpool		
Academic Supervisor(s):	Dr Raphaël Lévy; Prof Patricia Murray; Dr Neill Liptrott		
Research Group / Department:	Stem Cell Group		
Group's website:	www.renaltoolbox.org		
Full Address:	University of Liverpool Foundation Building, Brownlow Hill Liverpool, L69 7ZX United Kingdom		
Expected Start Date:	01 April 2019		
Description:			
<p>The RenalToolBox is an EU-funded ITN that aims to develop novel tools and technologies to assess the safety and efficacy of cell-based regenerative medicine therapies for kidney disease. You will join a team of 15 Early Career Researchers (ESR) working across 10 different institutions towards this goal.</p> <p>In this position you will be employed by the University of Liverpool and join a team of researchers working at the Centre for Preclinical imaging, a state-of-the-art imaging facility housing a 9.4 T MRI, a high resolution CT, a PET/SPECT/CT as well as bioluminescence, photoacoustic and ultrasound instrumentation. In this project, you will develop methods for labelling mesenchymal stem/stromal cells (MSCs) with imaging agents (contrast media, tracers) and establish protocols for monitoring the cells' biodistribution and kidney structure in vivo. The overall goal of your project will be to determine the cell's behaviour in vivo with a focus on the identification of the organs that they populate, how long they survive in these organs and the extent by which they ameliorate kidney injury. You will also use advanced microscopy techniques (light sheet imaging and confocal imaging using a state-of-the-art Dragonfly microscope) to analyse whole organs and tissue sections ex vivo to assess the extent of MSC integration with the host tissue.</p> <p>You will develop skills in the following areas:</p> <ul style="list-style-type: none"> - Methods for assessing the cytotoxicity and cell labelling efficiency of novel contrast agents consisting of iron oxide nanoparticles (MR imaging), gold nanorods (photoacoustic and CT imaging) and radioisotopes (nuclear imaging). - Use of mouse models of disease to determine risks (safety) and benefits (efficacy) of MSCs as therapies for kidney injury. - Use of multi-modality imaging to determine MSC biodistribution and survival in vivo, with a focus on magnetic resonance, photoacoustic, CT, bioluminescence and nuclear imaging - Optical tissue clearing protocols for the analysis of intact organs using light sheet microscopy (in collaboration with Heidelberg University) 			

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The post holder will be employed on a fixed term (36-month contract) and enrolled as a PhD student at the University of Liverpool. The candidate will be expected to spend periods of time with other partners in the consortium.

More information about this consortium and the project can be found in www.renaltoolbox.org.

Required Skills / Qualifications:

Essential:

- BSc degree in a relevant subject (biomedical sciences, bioengineering, biophysics, molecular biology or other related subjects)
- Excellent oral and written communication skills with well-developed interpersonal skills.
- Ability to work effectively and collaboratively within a multidisciplinary team.
- Enthusiastic, self-motivated individual, willing to take part in personal skills training, international travel and public outreach activities.
- Demonstrated commitment to high-quality research.

Desirable:

- A Master's degree in biomedical sciences or a similar discipline.
- Research experience involving mesenchymal stem/stromal cells.
- Experience with preclinical imaging (MRI, photoacoustic, CT, BLI or PET).
- Experience with light sheet and/or confocal fluorescence microscopy.

The candidate is also required to fulfil the research experience and transnational mobility requirements outlined in <https://renaltoolbox.org/job-positions/>

Other requirements:

N/A