RenalToolBox – Project Description

ESR Number:	ESR5	**Host:**	LIVUNI
Project Title:	Assess the safety and efficacy of renal RMT using advanced imaging technologies.		
Research Field:	Biological Sciences		
Contact Person:	Dr Bettina Wilm, University of Liverpool		
Academic Supervisor(s):	Dr Bettina Wilm, Dr Marta Garcia-Finana, Dr Lorenzo Ressel		
Research Group / Department:	Stem Cells and Regenerative Medicine/Cellular and Molecular Physiology		
Group's website:	www.renaltoolbox.org		
Full Address:	University of Liverpool, Institute of Translational Medicine Department of Cellular and Molecular Physiology Liverpool L69 3BX		
Expected Start Date:	1 April 2019		

Description:

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.

The ESR appointed to this project will learn how to induce acute kidney injury in mice, using a surgical approach of ischaemia reperfusion. This acute kidney injury model will then be employed to assess the safety and efficacy of mesenchymal stromal cells (MSCs) of different origins. We will also explore the therapeutic potential of MSC-derived extra-cellular vesicles (ECVs). This aspect will be performed in close collaboration with other RenalToolBox ESRs.

The safety assessment will involve imaging of whole body and organs to detect possible tumour formation using a range of preclinical imaging instruments at UoL's Centre for Preclinical Imaging (CPI). Efficacy will be assessed using established biomarkers of renal injury and by monitoring renal function longitudinally. At the end-point of each study, various histological and immunohistochemical analyses will be undertaken to detect the administered cells and quantify the extent of histological damage.

Multivariate data modelling will be applied to characterise changes in renal function over time using multivariate mixed-effects models. The models will take into account the longitudinal nature of the data as well as the fact that the cells will come from different sources (ESR projects). The correlation structure of the dataset will be investigated and the various efficacy outcomes will be jointly analysed. The study will be carefully designed to minimise potential sources of bias.

The student will be trained in all aspects of animal handling, surgery and use of the imaging instruments (supervised by Dr Bettina Wilm). The student will also be trained to undertake histological analyses (supervised by Dr Lorenzo Ressel) and how to perform the appropriate

statistical tests (Dr Marta Garcia-Finana).

The post-holder will be employed on a fixed term (36-month) contract and enrolled as a PhD student at the University of Liverpool. To fulfil their research and training objectives, the post-holder will undertake secondments with other Partners in the consortium, i.e. including in other EU countries.

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

Required Skills / Qualifications:

Essential:
- BSc degree in a relevant subject (biomedical or biological science-based degree).
- 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/biological sciences or a similar discipline
- Research experience involving animal handling, histological or physiological analysis or preclinical imaging

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