



Research Assistant in Liver Tissue Engineering and Regenerative Medicine

Job Description (RS44)

<u>Job Title:</u>	Research Assistant , Liver Regeneration & Tissue Engineering Group
<u>Reporting to:</u>	Dr Luca Urbani, Principal Investigator, Liver Regeneration & Tissue Engineering Group (IoH), and Senior Lecturer (Adj), King's College London
<u>Duration:</u>	2 years initially
<u>Salary range:</u>	£30,470-£33,769 per annum (including London allowance), depending on experience and skills
<u>Annual leave:</u>	27 days per annum

Foundation for Liver Research & Institute of Hepatology

The Foundation for Liver Research (FLR) is the leading charity (RCN1134579) in the UK funding research into liver diseases. Based at the Institute of Hepatology, London, it currently supports 45 research scientists and postdoctoral students in a programme of basic and translational research focusing on the main clinical priorities in liver disease: <https://www.liver-research.org.uk/>.

The FLR was established in 1974, initially to support the pioneering research of Professor Roger Williams CBE, who established the world-renowned Institute of Liver Studies at King's College Hospital. In 2016, the FLR funded the construction of a new research Institute on the KCH Denmark Hill campus in south east London. The Institute of Hepatology, now led by the Acting Director Dr Shilpa Chokshi is directly managed by the FLR and is affiliated with KCH and King's College London as part of a three-way collaboration to foster research, academic and clinical links with the aim of maximising opportunities for basic and translational liver research.

Current research activities at the Institute of Hepatology have a focused translational perspective and fall under the common heading of 'Pathways Underlying Liver Injury and Disease Progression'. The current areas of investigation include Viral Hepatitis, Hepatocellular Carcinoma, the Gut-Liver Axis, NAFLD, Alcoholic Liver Disease, Cirrhosis and its complications, and Liver Regeneration and Repair. These projects are focused on understanding the biological basis of liver disease to support the discovery of interventions that lead to clinical benefits for patient.

The Institute of Hepatology, led by Acting Director Dr Shilpa Chokshi, operates as an independent research organisation, in affiliation with Kings College London and King's College Hospital for the purposes of academic

recognition and access to clinical material and this relationship is outlined in a Memorandum of Understanding.

Research in the Institute is organised around major research projects within the common overall theme of liver cell injury and repair.

Background

The aim of the project is to study the role of the extracellular matrix (ECM) in chronic liver disease and cancer using novel dynamic immunocompetent 3D systems for disease modelling. In particular, the cross-talk between immune cells, hepatic or cancer cells and ECM will be the focus of the study.

There is an urgent need for reliable and reproducible methods to further understand the pathogenesis of liver diseases as current *in vitro* cellular and *in vivo* animal models utilized do not completely mimic the mechanisms of human liver injury and disease progression. Current methodologies focus on the individual cellular components and do not take into consideration the structural complexity, function and relationship of these cells with the ECM. Bioengineered liver and cancer constructs represent a robust and biologically relevant model where disease mechanisms and identification of new biomarkers can be investigated, paving the way to personalized *in-vitro* models.

The bioengineered liver and cancer models combine i) an extracellular matrix (ECM)-derived scaffold, obtained through decellularization of rat or human liver or cancer tissue samples; ii) expansion and seeding of human primary hepatic cells (hepatocytes, hepatic organoids, endothelial cells, Kupffer cells and stellate cells) or cancer cells and cancer associated fibroblasts, iii) customised bioreactors for the support of cell survival in 3D, and iv) tissue resident and circulating immune cells.

The 3D innovative seeding and culture techniques will examine compatibility of the components to obtain an immunocompetent preparation with cell heterogeneity reflecting specificity of a native tissue. In these models, we will explore mechanisms of pathophysiology, in particular the interactions between the ECM and immune cells in liver fibrosis and cancer.

Post Specification

The Foundation for Liver Research is seeking an enthusiastic, experienced, flexible and committed Research Assistant.

As part of this project, the job will focus on the isolation and culture of primary hepatic cells to repopulate decellularized liver scaffolds, operating of bioreactors following established protocols, analysis of liver construct remodelling upon activation of fibrogenic processes, characterization of repopulated scaffolds for functional markers.

The Research Assistant will provide technical support by helping with lab organisation, conduct research experiments, collect and analyse data and write reports. The post holder will be a point of contact for staff and students regarding experimental procedures and techniques for the research area.

Importantly, the post holder will be in charge of day-to-day management of the group's lab space, ordering of consumables, lab safety, student training, and sample records, under the supervision of the Group Leader Dr Urbani.

The post holder will also have lab management and safety responsibilities for one floor of the Institute of Hepatology, under the supervision of the Institute Manager.

Duties and Responsibilities:

- To liaise, assist and interact with group members to perform and optimise isolation of different primary cell populations from human liver samples. This will include setting up experiments and preparing reagents.
- To culture, characterize and cryopreserve primary cell lines from patients with or without liver disease, and cancer cell lines.
- To grow and maintain banks of cell lines using aseptic techniques.
- To decellularise rat and human liver and cancer tissue samples for tissue engineering purposes.
- To maintain and operate equipment and instruments used by the research group.
- To advise academic staff, research staff and students in the practical and safe operation of equipment and reagents, including preparation of risk assessments and operating procedures.
- To establish, organise and maintain accurate records of clinical samples, laboratory reagents, and equipment.
- To purchase laboratory reagents, equipment and maintain supply chains.
- To organise shipments and co-ordinate deliveries to collaborators via external couriers.
- Provide training, support and advice to new undergraduates and PhD students on safety operations, basic lab practice and lab techniques.
- Undertake GCP and HTA training to facilitate appropriate interaction with hospital staff and patient participants from who research samples are derived.
- Contribute to overall activities of the Institute including attendance at the weekly Journal Club.
- To undertake specific safety responsibilities relevant to the group's work and for a specific department of the institute (one floor).
- To keep detailed, accurate and comprehensible records of experimental plans and work and to communicate developments and results to colleagues on a regular basis.
- Job descriptions cannot be exhaustive and the post-holder may be required to undertake other duties which are broadly in line with the above key responsibilities. As duties and responsibilities change, the job description will be reviewed and amended in consultation with the post holder.

The post offers an excellent career development opportunity for a laboratory scientist with experience in cell culture, lab management, hepatology, cancer or tissue engineering. Training will be available and there will be opportunity for the post holder to develop his/her own interests within the scope of the project.

Dr Urbani's Liver Regeneration and Tissue Engineering group at the Institute of Hepatology, London, focuses on the study of the cross-talk between the liver ECM and hepatic and cancer cells using novel 3D bioengineered liver systems with structural integrity and metabolic and immunological function. Dr Urbani has extensive experience in the study of ECM mechanical and biological properties, development and validation of 3D cultures, labelling of cells and proteins, microfluidic and tissue engineering technology.

The group collaborates with a number of national and international groups working on liver cancer, liver disease and tissue engineering, and provides a dynamic, young, supportive and inclusive work environment.

Person Specification

The following skills and attributes are required for the Research Assistant position:

Essential skills:-

- MSc or equivalent in biological science or related subject
- Excellent organisation skills and the ability to work independently
- Excellent experience and skills in lab management
- Laboratory-based research experience in cell-culture and molecular biology techniques

- Laboratory-based research experience in DNA, RNA and protein assays (ELISA)
- Laboratory-based experience in fluorescence microscopy
- Ability to quickly learn new laboratory assays and research techniques
- Proven ability to work with colleagues
- Good interpersonal skills that demonstrate the ability to establish and maintain effective working relationships with students, staff, peers and management
- Commitment to and experience with Health and Safety
- Excellent communication skills in English
- Proficient IT skills including spreadsheet, presentation and word processing software
- Attention to details
- Enthusiasm to work as part of a multi-disciplinary team

Desirable skills:-

- Experience of working with rodents
- Experience with decellularization and liver fibrosis and liver cancer
- Experience of working with next-generation tissue engineering technology
- Good publication record in leading peer-reviewed journals
- The ability to prepare data for publication including statistical analysis
- Experience of cross-discipline collaboration
- Ability to present research findings at internal, national and international meetings

The post is offered for a period of 2 years with possibility of extension.

For informal enquiries please contact Dr Luca Urbani: luca.urbani@researchinliver.org.uk

Application process:

If you are interested in this post please send a 1-page covering letter explaining your research background and suitability for our team, together with a detailed CV describing your experience to date and including names and contact details of two referees, one of whom is the current/most recent employer, to:

Natalie Day, Chief Executive n.day@researchinliver.org.uk Tel: 020 7255 9832

Foundation for Liver Research

c/o Institute of Hepatology, London, 111 Coldharbour Lane, London SE5 9NT **Quote Job Ref: RS44**

In the event that you are invited for interview we will contact you by email confirming the arrangements. Due to current covid-19 regulations interviews will be held online.

The Foundation has applied for an employment sponsorship license but as at date of advert can only accept applications from UK/Irish nationals and EU nationals and individuals with existing permission to work in the UK.