THE UNIVERSITY OF MANCHESTER

PARTICULARS OF APPOINTMENT

FACULTY OF MEDICAL AND HUMAN SCIENCES

INSTITUTE OF INFLAMMATION AND REPAIR

CENTRE FOR TISSUE INJURY AND REPAIR

RESEARCH ASSOCIATE IN MESENCHYMAL STEM CELLS

Vacancy ref: M&HS-07638

Salary:	£30,738 to £34,576 per annum
Hours:	Full Time
Duration:	Fixed term, immediate start available for 7 months
Location:	University of Manchester Campus, Oxford Road Manchester
Responsible to:	Dr Stephen Richardson, Lecturer in Cell and Tissue Engineering

Enquiries about the vacancy, shortlisting and interviews:
Dr Stephen Richardson
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The University of Manchester

The University of Manchester is Britain's largest and most popular university, with a distinguished history of academic achievement and an ambitious agenda for the future. The University, with income in excess of £780 million, has four Nobel Prize winners amongst its current academic staff, and has embarked on an exciting and bold course which aims to make us one of the top 25 universities in the world, as set out in the University's strategic vision for 2020: Strategic Vision 2020.

In the Research Excellence Framework (REF-2014), 83% of our research activity was judged to be 'world-leading' (4*) or 'internationally excellent' (3*). The University was ranked 5th in the UK in terms of research power. We had one of the broadest submissions of any university in the UK and were recognised as excellent in disciplines which span the full range of academic research, including Allied Health Professions, Dentistry, Nursing and Pharmacy; Biological Sciences; Computer Science and Informatics. The University's research strategy can be found via the following link: UoM Research Strategy.

The academic structure of The University of Manchester is made up of Faculties and Schools. There are four Faculties and further information about each Faculty and its related Schools can be found at UoM Faculties and Schools

The Faculty of Medical and Human Sciences (FMHS)

The Faculty of Medical and Human Sciences is a leading international centre for research and education in medicine and a spectrum of health-related professions including nursing, midwifery, social work, pharmacy, dentistry, psychology, audiology and speech and language therapy.
A major review in 2011/12 led to a new strategy and structure intended to enhance our research and teaching performance. A key component of the new approach is the creation of a matrix structure linking five Faculty Schools with six Faculty Institutes. The objective is to ensure that the Faculty achieves a major international academic profile in each priority area within a period of five years.

The new strategy will focus our research effort in six priority areas:

- Human Development including Women's and Children's Health
- Cardiovascular Sciences
- Cancer Science
- Inflammation and Repair
- Brain, Behaviour and Mental Health
- Population and Health Sciences

Details of the structure can be found at: FMHS Structure.

FMHS has a total income of £210 million, around 6,500 undergraduate students and 2,500 post graduate students.

The Faculty has strong relationships with outstanding NHS partners which are critical in achieving our mission.

Manchester Academic Health Science Centre (MAHSC)

The University, and in particular the Faculty of Medical and Human Sciences, is a key member of the Manchester Academic Health Science Centre (MAHSC). Formed in 2008, MAHSC is a Federation of Equal Partners enabled by a Company Limited by Guarantee. The partners involved in the MAHSC are: The University of Manchester, Central Manchester University Hospitals NHS Foundation Trust, Manchester Mental Health and Social Care Trust, Salford Clinical Commissioning Group, Salford Royal NHS Foundation Trust, The Christie NHS Foundation Trust and University Hospital of South Manchester NHS Foundation Trust.

MAHSC is one of only six Department of Health designated AHSCs in the UK. The designation is a mark of excellence across research, innovation, education and patient service, and recognition of the potential to excel in translational medicine. MAHSC's vision is to *be a leading global centre for the delivery of innovative applied health research and education into healthcare*. As with other AHSCs, MAHSC has a dual role: to act as a beacon of international excellence for UK plc and to provide leadership and early adoption for our local health system. This will be delivered via a tripartite approach encompassing: research and innovation; education and training and clinical service.

For further information, please refer to the MAHSC website: www.mahsc.ac.uk.

The Institute of Inflammation and Repair

The Institute of Inflammation and Repair is one of six Research Institutes in the Faculty of Medical and Human Sciences. Six Centres (Respiratory and Allergy, Gastrointestinal, Tissue Injury & Repair, Musculoskeletal, Immune Mechanisms and Dermatology) are brought together under the leadership of Professor Jane Worthington. The research interests of the groups range from basic science through to applied and population based medicine across a range of clinical specialties. Strong research links between these groups will ensure that the research carried out is truly translational. For further information, please refer to the Institute website: www.inflammation-repair.manchester.ac.uk.

Centre for Tissue Injury and Repair

The centre for Tissue Injury & Repair encompasses those individuals (both scientists and clinicians) with a research focus in tissue development/structure, homeostasis and regeneration from the level of cellular and molecular mechanisms of injury and repair through to clinical impact. It is a cohesive interdisciplinary team with well-established collaborations in the Faculty of Life Sciences and Faculty of Engineering and Physical Sciences and a number of world leading institutions ensuring a multi-faceted research focus and a drive towards the development and clinical application of novel therapies.
The centre has a strong scientific base and utilizes a range of molecular, cellular and structural approaches to bear on its current strategy to i) Understand fundamental aspects of tissue structure and homeostasis; and ii) Develop new multi-disciplinary approaches to tissue repair and regeneration including the use of stem/progenitor cells and novel biomaterials. For further information, please refer to the website:
http://www.inflammation-repair.manchester.ac.uk/tissueinjury

Project Background

Isolation of single cells and pure cell (sub)populations from complex, mixed-population primary biological samples and cultures is essential across a range of disciplines, including diagnostics, research, and application in cell-based regenerative therapies. Currently the most common approaches to achieve this are fluorescence-activated cell sorting (FACS) and magnetic-activated cell sorting (MACS). However, both have limitations, including low efficiency or high cell death, require expensive specialist reagents or equipment, and are difficult to translate to a GMP-compliant, clean-room setting.
The long-term aim is the development and commercialisation (with Harman Technology Ltd) of a novel, simple, quick and cheap device for selecting rare cells from cell populations which has potential for application in biomedical research, cell analysis, storage (banking), therapy, culture, detection of infections, diagnosis and drug development.
Previous evidence has demonstrated efficient capture of cell sub-populations with equivalent purity and viability to MACS and the ability to identify rare populations. This project will extend these early studies to optimise efficiency of isolation of MSCs from mixed cell populations and ensure long-term viability and phenotypic stability.

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Job Description

Overall Purpose of the Job

We are looking for an enthusiastic, self-motivated post-doctoral researcher to participate in a project entitled 'Enhancing biomedical research using a novel cell separation device', which is fully funded for 7 months in the first instance.

Your main role will be to test a novel cell separation device developed by Harman Technology Ltd to establish the efficiency of isolation of human mesenchymal stem cell sub-populations. Isolation will be achieved using antibodies for recognised cell surface markers, applied within the novel isolation device, and isolated cell viability, proliferation and phenotypic stability will be assessed using conventional techniques, primarily flow cytometry and imaging. Findings will be compared to existing technologies including fluorescence-activated cell sorting (FACS) and magnetic-activated cell sorting (MACS).

You will join a research team focused mesenchymal stem cell biology and the development of mesenchymal stem cell-based therapies for musculoskeletal disorders. You will be expected to work as part of an established multi-disciplinary team and have ideally have publication-documented experience in cell (preferably mesenchymal stem cell) isolation and culture, adult stem cell biology. You will be an enthusiastic individual, with excellent communication skills and the ability to work collaboratively with industry, and will be expected to work efficiently and precisely, to deliver on the aims of the project in a short time-frame.

Key duties

Principal Responsibilities:

- Through interaction with the PI to contribute proactively to the development, progression and execution of project.
- Work closely with Harman Technology Ltd and their representatives to progress device development and provide regular feedback and updates on progress are required.
- To optimise antibody-based methods to allow isolation of cell sub-populations using both FACS and MACS technologies.
- To expand human mesenchymal stem cells and isolate sub-populations.
- To characterise isolated cell sub-population viability, proliferation and phenotype using a range of techniques.

General:

- Contribute to the implementation of the project, ensuring that milestones and deadlines are achieved and that work is completed on time and within budget.
- Analyse and interpret data and make a significant input to the scientific direction of the project.
- Prepare and present regular reports on research progress.
- Provide clear and timely written work, producing reports and publishing in high quality publications, and communicate verbally as required with other members of the University and with collaborating partners.

- To attend meetings and conferences as agreed by the project leaders and appropriate to the post and to represent the group when necessary.
- Keep abreast of current developments in the area of research by conducting relevant literature searches and reviews;
- Maintain expertise in scientific developments relevant to the objectives of the Centre for Tissue Injury & Repair and the Institute of Inflammation and Repair. Provide relevant expert advice within the Centre and to its project partners.
- Contribute to disseminating research information in an appropriate manner, through i) submission of abstracts and ii) publications in relevant journals;
- Contribute to appropriate grant proposal preparation.
- Play an active role in the research group, participating in all group meetings and activities.
- Assist in the laboratory supervision of undergraduate and postgraduate students and junior members of staff, if and when requested.
- To act at all times in accordance with the University's policies and procedures relating to Health and Safety, Equal Opportunities, and all other policies and procedures that apply to the post.
- To understand and engage with the University's social responsibility agenda and contribute, as appropriate, to the making a positive difference to the world locally, nationally and internationally.
- To undertake appropriate training and development activities.
- Any other duties appropriate to the post and grade that may be reasonably requested.

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Person Specification

You will be an enthusiastic and highly self-motivated individual, with excellent communication skills and a keen interest in mesenchymal stem cells and cell isolation/characterisation.

Education and Professional Qualifications

Essential

- You will hold a PhD in cell, preferably mesenchymal stem cell, isolation, culture and characterisation or equivalent.

Skills and knowledge

Essential

- Excellent research and methodological skills relevant to the research theme, particularly cell isolation and isolation using FACS and/or MACS.
- Experience of working with cell culture (preferably human mesenchymal stem cell)
- Excellent organisational and time-management skills, including the ability to deliver timely and high quality outputs.
- Ability to be creative in research ideas to develop/progress the research area
- Ability to plan, organise, and undertake work without detailed supervision
- Ability to develop effective working relationships with all levels of staff, students and external contacts
- Ability to work under pressure and maintain a high degree of accuracy
- Excellent verbal and written communication skills
- Ability to work effectively in a multi-disciplinary team
- Ability to work independently, use own initiative, where appropriate, and be proactive in approach to work
- Ability and enthusiasm to learn new skills outside own discipline

Desirable

- Experience of molecular biology techniques for cell characterisation (particularly flow cytometry, cell viability and fluorescence imaging techniques).
- Evidence of a developing track record in publishing and dissemination of high quality publications in peer-reviewed journals
- Experience of working collaborative between industry and academia
- Previous experience of applying for research funding
- Experience of supervising student research projects