

**THE UNIVERSITY OF MANCHESTER**

**PARTICULARS OF APPOINTMENT**

**FACULTY OF BIOLOGY, MEDICINE & HEALTH**

**SCHOOL OF MEDICAL SCIENCES**

**DIVISION OF CANCER SCIENCES**

**RESEARCH ASSOCIATE IN LEUKAEMIA STEM CELL BIOLOGY**

**VACANCY REF: BMH-023099**

<b>Salary:</b>	Grade 6 £36,024 to £44,263 per annum, depending on relevant experience
<b>Hours:</b>	Full Time (1 FTE)
<b>Duration:</b>	Fixed Term For 36 Months Starting 01 October 2023
<b>Location:</b>	Oxford Road, Manchester

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**Enquiries about the vacancy, shortlisting and interviews:**

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**The University of Manchester**

The University of Manchester is the largest single-site university in the UK with around 38,000 students and more than 11,000 staff. We aim to become one of the top 25 research universities in the world by 2020 and are committed to delivering (a) an outstanding teaching and learning experience; (b) contributing to the social and economic success of local, national and international communities; (c) producing the highest calibre graduates; (d) and developing our staff to be amongst the very best of their peers. Our trajectory is excellent, evidenced by recently being named as the world number one university in the [THE Impact](#) rankings.

We are unique in the UK higher education sector in having Social Responsibility as one of our three core strategic goals, sitting equally alongside our commitments to research and teaching. To achieve our ambitious goals, we aim to attract and retain the very best people to work across a range of academic disciplines and support functions.

The University of Manchester strives to make our community a welcoming, caring and enthusiastic one, fuelling ambition, combined with opportunities and support to help us all achieve our personal and professional goals. Our diverse job opportunities include an attractive [benefits package](#) with family-friendly policies that provide for flexible working. We care deeply about career and personal development, offering a structured induction programme for new staff, an annual performance and development review, staff training for all career stages and mentoring opportunities to support your career development. We have a genuine commitment to [equality of opportunity](#) for our staff

and students, and our ambition is to employ a workforce that reflects the diverse community we serve.

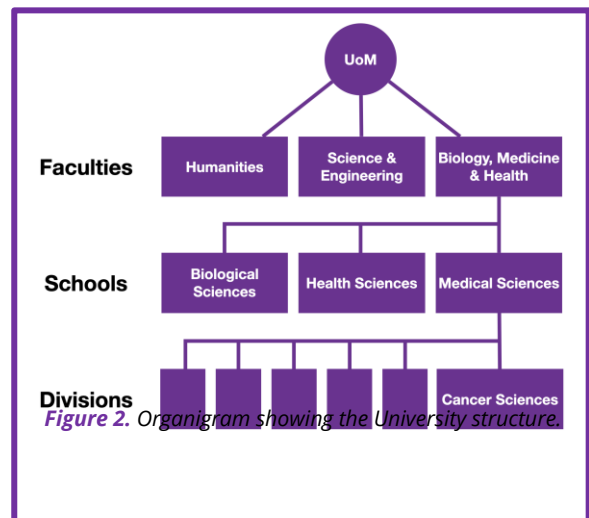
As a global institution, situated at the heart of a lively, [culturally diverse city](#), we welcome applicants of all nationalities. To help international job applicants plan for life in the UK, we have put together some useful [information on passports and visas](#), travel to the UK, accommodation and a number of other practical considerations.

### **Faculty of Biology, Medicine and Health (FBMH)**

The Faculty of Biology, Medicine and Health (Figure 2) has an integrated structure to deliver a truly translational approach to the life sciences, ensuring smooth research pathways - from pure discovery science through to clinical application and patient care. With a total annual income of over £300 million, and over 3,000 members of staff, the Faculty is comparable in size to a medium-sized UK university. Thirty undergraduate and 90 postgraduate programmes offer our 11,000 students opportunities to develop the skills and knowledge they need for a successful career. The integration of discovery biology, clinical application and patient care within a single Faculty, particularly in a region with notable health inequality, provides us with a real opportunity to have a very significant and positive impact on people's lives.

### **The School of Medical Sciences (SMS)**

The School of Medical Sciences is one of three Schools which form the Faculty of Biology, Medicine and Health. Led by Professor Tony Heagerty, the School contains the Divisions of Cardiovascular Sciences; Cancer Sciences; Dentistry; Developmental Biology and Medicine; Diabetes, Endocrinology and Gastroenterology; and Medical Education. In addition to a strong and diverse research base, SMS has a major teaching portfolio, being responsible for the MB ChB and BDS programmes plus a large suite of Masters courses.



### **Staff Learning and Development**

The Staff Learning and Development (L&D) team support the personal and professional development of all staff in the University.

They work closely with learning experts around the University including those based in local HR teams and those supporting academic staff and early career researchers (ECR)

L&D offer everything from off the shelf, face to face training, to bespoke one to one development support. By planning activity both in response to the strategic goals of the University and the learning needs of individuals, we aim to become a truly leading learning organisation.

### **Centre for Academic and Researcher Development**

Based within the Faculty of Biology, Medicine and Health, the Centre for Academic and Researcher Development delivers a number of face-to-face training programmes providing a variety of development opportunities for postgraduate students, research staff and academic staff.

Their goal is to create an environment that supports you through every stage of your career, allowing you to excel and reach your full potential.

**Development opportunities include:**

- Faculty-specific 'New Academic and Fellows Programme'
- Academic Staff Development Programme – supporting you through the different stages of your academic career
- Pedagogic and Staff Development Programme
- Mentoring
- Leaders in Teaching Programme
- Promotion workshops and access to 'Promotion Champions'

### **Division of Cancer Sciences (DCS)**

The Division of Cancer Sciences (DCS), which is effectively a large university department, was created in August 2016 with Prof. Stephen Taylor appointed as Head of Division in February 2019. It is a major contributor to the University's Cancer beacon and the wider Manchester cancer ecosystem, with research interests spanning discovery science, translational research and clinical studies.

The Division currently comprises approx. 300 staff including 66 academics, 66 researchers, 131 trainees and 28 admin staff. 168 honorary staff are associated with the Division; while not employees of the University they make invaluable contributions to a wide range of our activities, adding breadth and depth to our research, business engagement, teaching, social responsibility and internationalization.

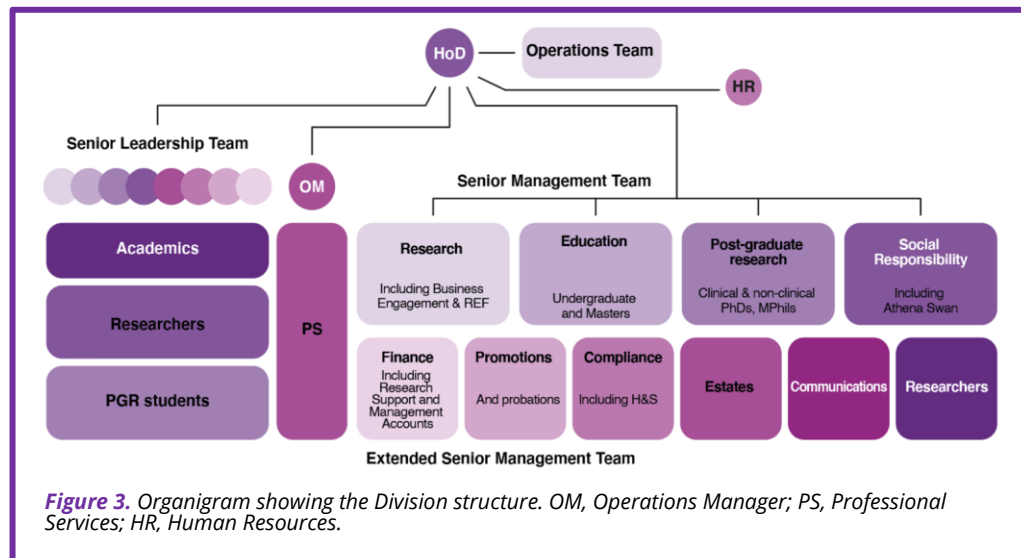
The Division of Cancer Sciences is very research active; with associated awards in 2016-2020 totaling over £450M. DCS has a strong portfolio of income from industry, working with a number of companies including Novartis, AstraZeneca, Merck, GlaxoSmithKline and Varian. The Division has a healthy pipeline of industrial collaborations, and we wish to build on these successful partnerships. Supporting a strong research profile, DCS generates a large number of high-quality publications, and we envisage a strong REF return at the next national audit. A large proportion of publications are in clinical oncology journals (e.g., Lancet Oncology, J Clin Oncol) consistent with the Division's strength in clinical research, but DCS staff also publish in high impact discovery journals (e.g., Nature, Cancer Cell).

Division staff contribute to a wide variety of teaching activities, including at undergraduate level within SMS (e.g., lectures, PBLs, PEPS and APEPs on the pre-clinical MB ChB program) and SBS (e.g., lectures, tutorials, practicals and projects on various life sciences units). The Division contributes to units in other Faculties, (e.g., medical physics in FSE). The Division also runs of a number of Masters programs in the oncology space (e.g. Experimental Cancer Medicine, Oncology, Cancer and Biology and Radiotherapy physics). In 2019, the Division made its first

teaching-focused appointment with the primary objective of establishing a novel blended on-line

Transformative Oncology Masters program. This is on schedule to be launched in September 2021 with the first students enrolling in September 2022, with a target of 30 students in

the first year, rising to 45 and 60 in subsequent years.



To manage the Division, we have established a comprehensive sub-structure comprised of an Operations Team, a Senior Leadership Team, a Senior Management Team and committees (**Figure 3**). The Operations Team meets weekly to update, discuss and action a variety of operational matters. The Senior Leadership Team consists of senior academics whose role is to assist the Head of Division with line management and annual P&DRs of the academic staff, and to provide guidance and advice to the Head of Division. In Spring 2020, we established a comprehensive set of sub-committees covering key areas of activity. The key leads form the Senior Management Team (SMT) who meet frequently to develop and deliver the Division's strategy. This new structure provides a functional framework for the Division and is allowing researchers and junior academics to help shape the Division into a vibrant academic environment. For example, the Researcher Committee has established an internal seminar series, while in parallel, four junior academics have established a 'Next generation' external seminar program which showcases external cancer-related research from investigators at the early stages of their independent careers. The Division now has an active Twitter feed to showcase our activities, and a popular use of this platform has been the *day in the life series*, where an individual takes over the account for a day to provide insight into the daily activities of our cancer researchers.

In January 2021, the Division of Cancer Sciences drafted a Vision for where it wants to be in 2026 and Strategic Plan for how to get there. A major component of this plan is a recruitment drive to appoint five high-flying early career researchers working in the discovery-translational oncology space, to tenure-track posts. This post is the first step on this path.

### **Our Strategic Partnerships**

The Division of Cancer Sciences has a number of key strategic partnerships that underpin its ambitions to develop next generation teaching and research.

**The Manchester Cancer Research Centre.** Led by Professor Rob Bristow, the MCRC is a world-leading research partnership founded by The University of Manchester, Cancer Research UK and The Christie NHS Foundation Trust, and is responsible for driving a consistent and integrated strategy for cancer research and innovation in Manchester. The MCRC's vision is that by uniting science and driving clinical excellence we will create a future free from the burden of cancer. In order to achieve this vision, the MCRC is leading in the development of prevention and early detection and precision medicine strategies that enable cancer to be identified earlier and curative treatments to be delivered to everyone. As a hub for Cancer research in the University structure, the Division of Cancer Science is a key component of the MCRC with many of our academic cohort working closely with the MCRC to drive a one-Manchester cancer vision to achieve Precision Medicine for All.

**The Cancer Research Manchester Institute.** Led by Professor Caroline Dive, the CRUK MI is a leading cancer research institute within The University of Manchester, spanning the whole spectrum of cancer research, from investigating the molecular and cellular basis of cancer, to translational research and the development of therapeutics. The Institute supports a number of investigative programmes, spanning both basic and translational cancer research. It has excellent laboratory facilities and outstanding core services, including genomic sequencing, confocal microscopy, bioinformatics, histology, and access to mass-spectrometry based proteomics. Staff within the Division of Cancer Sciences work very closely with CRUK MI staff at both the research and operational level, sharing both lab and dry space across the cancer campus, and together with the MCRC we aim to create a truly fantastic working environment that will allow all three partners to deliver their strategic goals.

**The Christie NHS Foundation Trust.** The Christie Hospital is the largest single site cancer centre in Europe, treating more than 60,000 patients a year. Based in Withington, it serves a population of 3.2 million people across Greater Manchester and Cheshire while more than a quarter of our patients are referred to us from across the UK. The Christie is ranked as the most technologically advanced cancer centre in the world outside North America and has been named by the National Institute for Health Research as one of the best hospitals providing opportunities for patients to take part in clinical research studies. The Christie's clinical services include radiotherapy, where is home to one of the world's largest radiotherapy departments and is now also the first NHS organisation in the UK to deliver high energy proton beam therapy; chemotherapy where it is one of the UK's largest chemotherapy unit highly specialist surgery for complex and rare cancers as well as a wide range of support and diagnostic services.

In addition to the Christie NHS Foundation Trust, the Faculty works alongside five additional local NHS Trusts as a key member of the [Manchester Academic Health Science Centre \(MAHSC\)](#) - a federation of equal partners that unites leading healthcare providers with world-class academics and researchers. It aims to be a global centre for the delivery of applied health research and education and provide leadership for our local and regional health systems.

The Faculty also plays a leading role in [Health Innovation Manchester \(HInM\)](#), which was launched in September 2015, as part of the UK Government's decision to devolve health and social care responsibilities to Greater Manchester. HInM offers a unique opportunity to bring together health and social care, academic and life science related business resources across the region to deliver

an innovative health ecosystem that can help accelerate innovation into our local health and social care systems, enhance our global scientific standing and act as a magnet for inward investment.

**Division of Molecular & Cellular Function.** Led by Professor Phil Woodman, DMCF is a Division in the School of Biological Sciences with researchers running an array of molecular cell biology research programmes, many of which are relevant to cancer research, including gene expression, chromatin and signalling (Andy Sharrocks, Sankari Nagarajan), RNA and protein fate (Phil Woodman), Cell dynamics (Pat Caswell, Chiara Francavilla).

Internationalisation. The Faculty has developed strategic partnerships with several internationally leading universities, including the University of Toronto, University of Melbourne, Peking University Health Science Center and Shanghai Jiao Tong University. We will be able to help you develop links with these universities and guide you through the available funding to support joint projects.

### **The Leukaemic Stem Cell Niche (LSCN) Group**

The researcher will work in the group of Dr Simona Valletta at the Oglesby Cancer Research Building, which houses the Manchester Cancer Research Centre and is on the same site as the new building for the Cancer Research UK Manchester Institute and the Christie Hospital. The successful applicant will be able to use this collaborative environment to further their research career. The aim of the group is to unravel the complex interplay between Acute Myeloid Leukaemia and the tumour microenvironment to develop new potential therapeutic strategies useful to improve AML patients' outcomes.

Applicants are encouraged to make an informal enquiry about the post ahead of applying.

### **Project background and purpose of the post**

Background: Ageing is a major risk factor for developing cancer, including acute myeloid leukaemia (AML), the most common acute leukaemia in adults. The tumour microenvironment (TME) is the environment that surrounds the tumour and includes stromal and immune cells, that interacting with each other and with the tumour cells, enable cancer to grow faster. This concept also applies to AML, where the TME is hijacked by the leukaemic cells, creating a more favourable environment, and facilitating immune evasion. Our previous work has shown that ageing can dramatically affect the cells of the TME: stromal cells are particularly susceptible to this age-related impact and facilitate AML propagation. An impaired immune regulation is also a shared hallmark between ageing and AML: leukaemic cells reside in an immunosuppressive environment where they adapt various strategies to evade immune surveillance. However, although recent studies have suggested that the aged TME may exert dramatic effects on tumour progression, a direct link to AML formation has yet to be investigated.

### **The project will involve:**

- Investigation of the age induced TME remodelling (stromal and immune populations) driving the onset of AML
- Identification and validation of new markers useful to track the phenotypic evolution of persistent leukaemia cells over time
- Characterization of spatial interactions between leukaemic cells and aged TME using Imaging mass cytometry (IMC)

This project aims to characterize the role played from the aged TME (including stromal and immune populations) in the development of leukaemia with the final goal of improving outcomes for elderly AML patients, developing tailored therapies targeting the tumour microenvironment.

**Practical experience with animals (mice) and flow cytometry is mandatory.**

The project also includes *in vitro* co-culture cell assays, molecular biology, gene expression and epigenetic profiling. The position requires good knowledge in one or more of the following fields: haematopoiesis, leukaemia biology, tumour microenvironment, immunology.

**Training opportunities:** The successful candidate will be based in Dr Valletta's group and be embedded in the excellent scientific environment of the Oglesby Cancer Research Building and the new Paterson Building, home to the Cancer Research UK Manchester Institute. The successful candidate will have the opportunity to be trained to use state-of-the-art platforms, including 10x Chromium, CyTOF and Imaging Mass Cytometry technologies, all available at the University of Manchester.

The successful candidate will work directly with Dr Simona Valletta and her team but will also work closely/collaborate with scientists and clinicians with diverse backgrounds inside and outside the division, based at Cancer Research UK Manchester Institute and the Christie Hospital. They will take part in research activities that include leukaemia biology, immunotherapy, *in vivo* mouse models and omics-based approaches.

**Key Responsibilities, Accountabilities or Duties**

**Research:**

- Drive and manage the project intellectually and technically using experience, methodical approach, attention to detail and evaluation of the literature, with the assistance of their mentor if required
- Organize and prioritize work efficiently and effectively and take personal responsibility for assigned tasks
- Design experiments and write clear, updated experimental protocols and scientific techniques for existing and new laboratory methods
- Optimize and develop research methods
- Conduct individual and collaborative research projects
- Be proactive and creative in identifying areas for research
- Analyse experimental data and keep organized data archives
- Participate actively in the data analysis and interpretation
- Possess and maintain an up-to-date knowledge and understanding of the field
- Work as part of a team or independently, acting as a point of reference to less experienced members of the team, providing guidance and support
- Develop research objectives and proposals for own or joint research, with the assistance of a mentor if required.
- Conduct individual and collaborative research projects.
- Write up research work for publication.
- Continually update knowledge and understanding in field or specialism.
- Translate knowledge of advances in the subject area into research activity.

- Assist in the training and supervision of students
- Be responsible with others for the daily housekeeping of the laboratory area, ensuring
- good laboratory practice
- Participate actively to the production of manuscripts for publication

**Communication:**

- Interact and collaborate productively with the other lab members and research teams
- Clearly present research outputs at internal laboratory meetings and externally at research conferences
- Communicate with various stakeholders (academics, health professionals, patients, and the public)
- Ensure communication with the line manager is appropriate, timely and effective
- Be involved in the supervision of projects
- Maintain confidentiality regarding research data when interacting with non-collaborating researchers

**Collaboration:**

- Build a collaborative network of internal and external contacts
- Collaborate with academic colleagues on areas of shared research interest
- Contribute to collaborative decision making with colleagues in areas of research
- Attend and contribute to relevant meetings

**General:**

- Manage your own research and administrative activities, with guidance when required
- Understand and being committed in promoting Equality & Diversity in line with the University's policies
- Maintain confidentiality of information in line with data protection requirements and University policy
- Be aware of the risks in the working environment and their potential impact
- Contribute to the University's agenda for social responsibility, including sustainability

## PERSON SPECIFICATION

### Essential Skills, Knowledge or Experience:

- Have, or be about to obtain, a PhD in a relevant area
- Substantial experience in leukaemia biology and haematopoiesis
- Substantial laboratory experience in working with murine models and handling mice
- Substantial laboratory experience in molecular biology
- Independent experience with complex flow cytometry analysis and ideally FACS sorting
- Experience working with haematopoietic stem/ progenitor cells and culturing them in vitro
- Ability to independently drive, innovate and complete scientific projects
- A can-do attitude, with a genuine interest in progressing world-leading research
- Strong communication, organisational and time-management skills, with evidence of methodical and careful approach laboratory work
- Ability to work as part of a team and independently
- Ability to communicate in both written and oral formats
- Proven record of journal publications and conference presentations
- Excellent interpersonal skills
- Proven ability to meet deadlines
- Ability to contribute to broader management and administrative processes
- Ability to assess and organise resources
- Good written and spoken English
- Understand equal opportunity issues as they may impact on areas of research content
- Enthusiasm for leukaemia research in a multi-disciplinary academic environment

### Desirable Skills, Knowledge or Experience:

- Bioinformatics expertise (RNAseq, ATACseq, single cell analysis)
- Ability to develop techniques as required for individual projects
- Experience of supervising student research projects
- Proven record of publishing and dissemination of high-quality publications in peer-reviewed journals
- Previous experience of applying for research funding