THE UNIVERSITY OF MANCHESTER

PARTICULARS OF APPOINTMENT

FACULTY OF BIOLOGY, MEDICINE & HEALTH

SCHOOL OF MEDICAL SCIENCES

DIVISION OF DEVELOPMENTAL BIOLOGY & MEDICINE

RESEARCH ASSOCIATE IN FETAL HEALTH

VACANCY REF: BMH-025977

Salary:	Grade 6, £36,024 to £44,263 per annum, depending on relevant experience
Hours:	1 FTE – Flexible working, on-call hours, overnight working. Hours of work wil vary week on week
Duration:	Fixed term until 29 February 2028
Location:	Oxford Road, Manchester

Enquiries about the vacancy, shortlisting and interviews:
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Introduction to the University of Manchester and the Faculty of Biology, Medicine and Health (FBMH)

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 are committed to expanding our world-leading research, and exploiting our capability for interdisciplinary research; transforming the way our students learn to make them the most employable graduates and truly global citizens; and ensuring that all our activities make a positive difference to society. The new vision and strategic plan for The University of Manchester will take us into our third century. It builds on a rich heritage of discovery, social change and pioneering spirit that is at the heart of our University and our city region.

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 Faculty of Biology, Medicine and Health is comparable in size to a medium-sized UK university. Thirty undergraduate and 90 postgraduate programmes offer our students opportunities to develop the skills and knowledge they need for a successful career.

The Faculty has an integrated structure, developed to deliver its key research and innovation goals

(I) to undertake world-class discovery science, (II) to develop new approaches to prevention and early detection of disease, and (III) to develop the next generation of person-centred therapies. This structure facilitates interdisciplinary working and enables us to learn from each other and share best practice, articulate our research strengths, drive large-scale, collaborative research activities and strengthen relationships with our research and healthcare partners. 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 Faculty has established a number of key strategic partnerships that underpin its ambitions to develop ground-breaking research. Working alongside six local NHS Trusts, the Faculty is 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. Cardiovascular research is a pillar of MAHSC, which applies discovery and translational science, and excellence in clinical care, to improve life expectancy for patients with cardiovascular disease in Greater Manchester.

Key partnerships in the charitable sector include British Heart Foundation; Cancer Research UK; Diabetes UK; and the Wellcome Trust; and the Faculty also has research and funding links to a number of commercial organisations including Unilever, AstraZeneca, GlaxoSmithKline and Boots, who will help us to bring new drugs and products to the market.

Working for the University of Manchester

The University of Manchester strives to make our community a welcoming, caring and enthusiastic one, fuelling ambition 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 are proud 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.

Division of Developmental Biology and Medicine

The Division of Developmental Biology and Medicine is comprised of approximately 20 principal investigators made up of both clinicians and basic scientists with national and international reputations in their respective fields.

Members of our Division work closely with colleagues within the Faculty of Biology, Medicine and Health and benefit from multidisciplinary collaborations between molecular biologists, physiologists and clinicians accessing a population catchment of over 1.5 million people.

Our research groups are diverse and work in a host of model organisms on questions directed at understanding fundamental mechanisms involved in gene expression, cell signalling, and cell behaviour. We employ a wide range of approaches that include genome manipulation, advanced imaging of cells and whole embryos, quantitative measurement of RNA and protein in single cells and the manipulation of cellular forces. This work is illuminating the mechanisms by which different cell types and tissues arise during development, and mechanisms regulating stem cell maintenance and differentiation.

Most of the groups are based in the state-of-the-art purpose-built research laboratory and office suites in the Michael Smith Building and at St. Mary's Hospital, providing an integrated and stimulating research environment for our biomedical scientists.

Background
The post is based at the Maternal and Fetal Health Research Centre (MFHRC). The MFHRC is located in Saint Mary's Hospital (Manchester) and is one of 3 such Centres in the UK designated by Tommy's The Baby Charity. We consist of clinical scientists, basic scientists, postdocs, clinical research fellows, research midwives, PhD students and technical staff, all of whom work together with a combined aim of making pregnancy safer for both the mother and baby, so that we are now widely considered as the largest pregnancy research group in Europe.

The fruitful scientific exchange and collaboration afforded by this heterogeneous team of researchers has enabled a successful track record of working on different components of pregnancy diseases. Many of our research projects are focused on fetal growth restriction, stillbirth and maternal and fetal consequences of problems associated with diabetes, high blood pressure (preeclampsia) and cardiac dysfunction.

Our aim is to find solutions to pregnancy problems by translating our research findings into clinical practice. Therefore, our research strategy mission is to:

1. Provide a better understanding of the biological mechanisms during normal pregnancy.
2. Investigate the pathophysiological mechanisms underpinning pregnancy problems and their short and long-term consequences.
3. Develop and establish new tools for diagnosing and treating pregnancy problems.
4. Improve patient care and the health of mothers and their babies.

Overall Purpose of the Job
Fetal growth restriction is a significant problem, associated with both short- and long-term health and economic burdens. Current therapy prescribed antenatally to treat maternal cardiac disease in the UK is likely to increase the risk of fetal growth restriction potentially by reducing umbilical blood flow. The purpose of this project is to discover the causal link between safety concerns regarding infant outcomes in women with medicated cardiac dysfunction during pregnancy and to evaluate the effects of a potential alternative therapy.

Fear of fetal toxicity is one of the major limitations for drug testing by the pharmaceutical industry in human pregnancy.

This preclinical study will use a combination of *ex vivo* (human tissue samples), *in vitro* (on-chip) and *in vivo* (pregnant mouse) models to provide pharmacological evidence to underpin the use of medications for maternal cardiac dysfunction in clinical practice, leading directly to a clinical

trial, and establish a new alternative technology for developmental toxicology testing.

The project relies on the availability of fresh placenta tissue which therefore means the hours of work will vary on a daily basis often with very little notice.

Key Responsibilities, Accountabilities or Duties

- Work directly with Dr Teresa Tropea, the Research Fellow, and collaborators to prepare for and conduct physiological experiments.
- Assess the effects of drugs on placental and maternal vascular function in tissues isolated from human samples, primary cell co-cultures and perfusion of tissues.
- Assess placental metabolism and transfer of drugs in tissues isolated from human samples.
- Assess the effects of drugs on fetoplacental blood flow, fetal growth and fetal cardiovascular function in pregnant animals.
- Examine the expression of key proteins/genes using quantitative and semi-quantitative methods (e.g. qPCR, Western blotting, ELISA).
- Prepare and present regular reports on research progress.
- Be prepared to present work at national and international meetings.
- Submit research work of suitable quality for publication in peer-reviewed journals.
- Contribute to appropriate grant proposal preparation.
- Liaise with clinicians following their identification, recruitment and scanning of patients at the MFHRC.
- Actively read the scientific literature relating to (and around) the project.
- Analyse and interpret data and provide an intellectual contribution to the project.
- Take an active part in group meetings, and make presentations at these when required.
- Assist in the laboratory supervision of undergraduate and postgraduate students and junior members of staff, if and when requested.
- Perform routine laboratory tasks and duties including reagent ordering, COSHH assessment and safety training.
- Assist in the collection and storage of human tissue samples, in accordance with current Human Tissue Act guidelines and local ethics committee approval.
- Contribute to the delivery of undergraduate and postgraduate programmes within the MFHRC and the Faculty of Biology, Medicine and Health.
- 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.
- Have a good standard of record keeping.
- Work with other members of the department.

- Liaise with all colleagues in the co-ordination of experimentation, laboratory equipment usage and cell isolations.

Local training and support will be offered in areas in which you lack full familiarity.

Person Specification
Essential Skills, Knowledge and Experience:

- A PhD awarded or near completion in an appropriate Biomedical Sciences field.
- Recent experience of in *ex vivo* physiology and real-time measurement experimentation (e.g. wire myography, dual perfusion systems).
- Recent experience of *in vitro* techniques, primary cell isolation and characterisation.
- Laboratory research experience in molecular techniques (qPCR, Western blotting, ELISA).
- Recent experience of working with experimental animals.
- Ability to summarise data and produce scientific ideas.
- Excellent attention to detail.
- Evidence of good written and oral communication skills.
- A good recent publication record appropriate to level of experience.
- Familiarity with the application of appropriate statistical methods.
- Ability to work independently and as a part of a multi-disciplinary team that comprises clinicians and biomedical scientists.
- Be able to demonstrate ability to adjust plans as a result of changing daily priorities.
- Ability to meet deadlines.

Other Essential

- Live within a close proximity to the University main campus (due to nature of the hours / flexibilty required for the role)
- Abilty to work out-of-hours (**weekends and/or nights**) appropriate to the nature of research reliant on human and animal samples.

Desirable Skills, Knowledge and Experience:

- A Honours degree
- Research experience on reproductive biology and pregnancy.
- A UK Home Office personal license.

Successful candidates may be subject to pre-employment screening carried out on our behalf by a third party. The offer of employment will be dependent on the successful candidate passing that screening. Whilst you will be required to provide express consent at a later stage, by continuing with your application now you acknowledge that you are aware that such screening will take place, and agree to take part in the process.