

**Faculty of Biological Sciences
School of Biomedical Sciences**

**Summer Research Placement
8 weeks, between 6th June – 29th July 2022**

Job Summary

In addition to myocardial alterations, heart failure with preserved ejection fraction (HFpEF) is also associated with vascular dysfunction and myopathy of the peripheral skeletal muscles. We have shown vascular dysfunction in a rat model of HFpEF, but the mechanisms underlying this dysfunction are not yet fully understood. A family of E3 ligases, including muscle ring finger protein 1 (MuRF1) and muscle atrophy F-box protein (MAFbx) promote atrophic stress in skeletal muscle, with evidence also suggesting a role for these atrogens in cardiac hypertrophy. However, whether MuRF-1 and MAFbx contribute to vascular dysfunction in HFpEF remains unknown. This project will explore the molecular mechanisms of vascular dysfunction in HFpEF and assess whether MuRF-1 and MAFbx play a role. This project will also determine whether a novel MuRF-1 inhibitor has an effect on vascular function in HFpEF.

Stipend is £200 per week.

Informal enquiries may be made to Dr Gemma Lyall

To apply, please send your CV and a covering letter (200-300 words maximum)

Closing Date: Noon on 28th January 2022

Interviews: tbc

Job Description

We are looking for an enthusiastic and highly motivated undergraduate student to work on a project investigating the potential interplay between vascular maladaptation and skeletal muscle atrophy in heart failure with preserved ejection fraction (HFpEF). You will work in Professor Karen Birch's lab group, under the supervision of Dr Gemma Lyall and in collaboration with a team of skeletal muscle biologists led by Dr Scott Bowen. We have shown vascular dysfunction in a rat model of HFpEF, but the molecular mechanisms underlying this dysfunction are not fully understood. We are interested in learning whether proteins responsible for skeletal muscle atrophy, i.e. MuRF-1 and MAFbx, are connected to changes we see in the vasculature in HFpEF. Supplementation of a novel MuRF-1 inhibitor has previously been shown to prevent SKM atrophy and cardiac cachexia in muscle wasting diseases, such as heart failure. However, the effect of this novel MuRF-1 inhibitor on the vasculature is yet to be fully investigated. Identification of targets, such as MAFbx and MuRF-1, could result in potential therapeutic targets leading to improvement of HFpEF symptoms such as fatigue and exercise intolerance. You will be responsible for running a short project assessing molecular changes in vascular tissue from a rat model of HFpEF. You will be taught how to perform western blots and PCR to compare proteins and gene expression between control and HFpEF vascular tissue. We will also teach you how to analyse the data you collect and display the data in graphs. You will have the opportunity to write up the results of

your project and give a short presentation of your project to the lab group. You will attend weekly lab group meetings with skeletal muscle biologists also working on the project, where you will gain a theoretical understanding of the wider project and develop your teamwork skills.

Reports to: Dr Gemma Lyall

Main Duties and Responsibilities

- Perform western blots and PCR to characterise proteins and gene expression in vascular tissue from animal models of HFpEF.
- Analyse and interpret the experimental data.
- Write a short report of your research project.
- Present the results of your project to the lab group at an informal meeting.
- Attend lab group meetings.
- Develop teamwork skills.

Person Specification

Essential

Enthusiastic and highly motivated undergraduate student with an interest in biochemistry and/or cardiovascular physiology.

Additional Information

Details of the terms and conditions of employment for all staff at the university, including information on pensions and benefits, are available on the Human Resources web pages accessible via the links on the right hand side, or at <http://www.leeds.ac.uk/hr/index.htm>

Criminal Record Disclosures

A Criminal Records Disclosure is not required for this position. However, applicants who have unspent convictions must indicate this in the 'other personal details' section of the application.

Disabled Applicants

The post is located in the Faculty of Biological Sciences. Disabled applicants wishing to review access to the building are invited to contact the department direct. Additional information may be sought from the Recruitment Officer, email disclosure@leeds.ac.uk or tel + 44 (0)113 343 1723.

Disabled applicants are not obliged to inform employers of their disability but will still be covered by the Disability Discrimination Act once their disability becomes known.

Further information for applicants with disabilities, impairments or health conditions is available in the applicant guidance.

University Values

All staff are expected to operate in line with the university's values and standards, which work as an integral part of our strategy and set out the principles of how we work together. More information about the university's strategy and values is available at <http://www.leeds.ac.uk/comms/strategy/>