

Biomolecular Sciences Research Centre (BMRC)

The [Biomolecular Sciences Research Centre \(BMRC\)](#) is based within the Faculty of Health and Wellbeing and consists of a number of research groups. In the Research Excellence Framework (REF) 2014 staff from the BMRC were returned in the Biological Sciences unit of assessment (UoA5). Sheffield Hallam was the second highest ranking modern university in this UoA with 46 per cent of our research being rated as world leading or internationally excellent (4* or 3*).

The BMRC has over 40 students on MPhil/PhD programmes, as well as a number of postdoctoral research assistants. Staff in the BMRC have an established record of obtaining external funding from research councils and charities and often work in collaboration with UK and international scientists, as well as clinical colleagues at a number of UK hospitals. Staff and postgraduate students present their research findings at national and international conferences.

In 2012, the BMRC was awarded the [Athena SWAN Silver Award](#), which was renewed in 2016 for a further 3 years. Athena SWAN is a charter to advance women's careers in STEM subjects (science, technology, engineering, maths and medicine). The silver award recognises and celebrates good practice in recruiting, retaining and promoting women in STEM subject areas within higher education.

How to apply

Applicants are requested to email a [postgraduate application form](#) (including a 1500 word proposal in section 9) to HWB-DoctoralAdmin@shu.ac.uk by 12 noon on Friday 24 February 2017.

Along with the proposal, please identify:

- the theme outlined below with which your proposal is aligned
- whether you are interested in a full-time (fully-funded) or part-time (fees only) scholarship

please identify which of the themes outlined below your proposed project falls within. You are encouraged to find out more about our staff and their current research to inform the development of your proposal, which will help ensure your proposal aligns with our research themes. However, the details of any successful project could potentially change, given input from the supervisory team.

Where English is not your first language, you must show evidence of English language ability to the following minimum level of proficiency: an overall IELTS score of 7.0 or above, with at least 6.5 in each component or an [accepted equivalent](#). Please note that your test score must be current, i.e. within the last two years.

Please view our [eligibility criteria](#) before submitting an application.

Selection process

Interviews will take place in the week commencing 27 March 2017.

Applicants are required to give a short 10–15 minute presentation followed by an interview. Interview panel members will include the postgraduate research tutor and a prospective director of studies. Where travel to Sheffield is not possible, interviews may be conducted by Skype or conference call.

Research Themes

Applications for PhD study are invited across three key research themes within the BMRC: Disease Mechanisms; Biomaterials and Bioanalytical Science.

Please see the [BMRC website](#) for more detailed descriptions of the areas available.

For informal enquiries for any of these areas please contact Dr Christine Le Maitre (Postgraduate Research Tutor for BMRC) c.lemaitre@shu.ac.uk who will be able to direct your enquiry to the appropriate person.

Successful applicants could receive the additional benefits of involvement in the University Alliance [Doctoral Training Alliance in Applied Biosciences for Health](#)

Disease mechanisms

Research within this theme focuses on the molecular basis of several disease states including:

- Cancer (Dr Neil Cross, Dr Christine Le Maitre, Dr Sarah Haywood Small, Dr Nikki Jordan Mahy, Dr Nick Peake and Dr Laura Cole).
- Neurobiology (Dr Alison Cross, Dr Susan Campbell, Dr Liz Allen, Dr Gail Haddock, Dr David Smith, Dr Caroline Dalton and Dr Alessandra Princivale).
- Immunology (Dr Sarah Haywood-Small, Dr Alison Cross and Dr Gail Haddock)
- Musculoskeletal disorders (Dr Christine Le Maitre, Dr Nick Peake and Prof. Peter Strong)
- Cardiovascular disorders (Dr Dan Kelly, and Dr Prachi Stafford)
- Reproduction and infertility (Prof. Susan Laird).

The research within the disease mechanisms group has received funding from many external sources including NC3Rs, AR-UK, MS Society, DISCs, Bowel & Cancer Research, British Endocrine Society and Bayer. Current and ongoing projects in this area are funded by Innovate UK, AR-UK, Sheffield Teaching Hospitals NHS Trust, British Endocrine Society and Bayer.

Biomaterials

In collaboration with the [Materials and Engineering Research Institute \(MERI\)](#), and materials scientists at other UK institutions, researchers within the BMRC are developing a number of smart biomaterials. Research into biomaterials covers a range of applications including:

- Smart biomaterials for regenerative medicine applications in musculoskeletal tissues (Bone, cartilage and intervertebral disc): Dr Christine Le Maitre, Prof. Christopher Sammon (MERI) and Prof. Andrew Alderson (MERI).
- Smart biomaterials for developing 3D models and regenerative medicine applications for gastrointestinal tissues, liver, bladder and skin: Dr Christine Le Maitre, Dr Nikki Jordan- Mahy, Dr Prachi Stafford, Dr Keith Miller, Prof. Malcolm Clench, Prof. Christopher Sammon (MERI) and Prof. Andrew Alderson (MERI).
- Antimicrobial biomaterial coatings for Joint Prostheses: Prof. Thomas Smith, Dr Tim Nicol, Dr Christine Le Maitre, Dr Sarah Forbes.
- Smart materials for the development of antimicrobial wound dressings: Dr Keith Miller, Prof. Neil Bricklebank, Louise Freeman Parry, Prof Chris Breen (MERI), Dr Francis Clegg.

The research within the biomaterials group has received funding from many external sources including MRC, AR-UK, IKC, Sheffield Children's Hospital NHS Trust. Current and ongoing projects in this area are funded by AR-UK and Sheffield Children's hospitals NHS trust.

Bioanalytical Science

The Bioanalytical Science Group (incorporating the Centre for Mass Spectrometry Imaging) carries out applied and multidisciplinary research related to the analysis of chemical and biological species in a variety of matrices. Projects may involve either the development of new analytical techniques or the application of existing techniques to new and complex analytical problems. Projects are available in molecular pathology, drug/xenobiotic distribution analysis, hair analysis, fingerprint analysis, chemical speciation and the study of metals uptake in biological systems. The Bioanalytical Group has received funding from many external sources including NC3Rs, EPSRC, CRUK and GSK. Current and ongoing projects in this area are funded by BBSRC and Innovate UK.

The majority of the projects offered will involve the use of advanced mass spectrometry techniques. The group has state of the art equipment including recently purchased instrumentation for MALDI-MS imaging, DESI-MS imaging, LESA-MS and LA-ICP-MS. We have also invested heavily in up to date software for 'omics data processing and have workstations set up with Progenesis Q1 and Progenesis QIP software for metabolomics and proteomics based projects respectively.

The key members of staff associated with this area are: Prof Malcolm Clench, Dr Simona Francese, Dr Catherine Duckett, Dr Tom Bassindale, Dr Laura Cole and Dr Philip Gardiner.