



Job title	Research Fellow (title will be Research Associate where an appointment is made before PhD is completed)	Job family and level	Research Level 4 (appointment will be Level 4 career training grade when an appointment is made before PhD has been completed)
School/ Department	School of Pharmacy / Advanced Materials and Healthcare Technologies Division	Location	Centre for Analytical Bioscience, Boots Science Building, University Park Campus

Purpose of role

This post is funded through a major £5M [BBSRC Strategic Longer and Larger \(sLoLa\) Grant](#) investigating the fundamental rules governing impermeability in Gram-negative bacteria. The programme brings together a multidisciplinary consortium across the University of Nottingham, University of Birmingham, Imperial College London and the Quadram Institute, integrating bacterial membrane biology, efflux systems, antimicrobial accumulation, quantitative mass spectrometry, spatial metabolomics and mathematical modelling to address antimicrobial resistance at a mechanistic level.

The Research Associate/Fellow will play a central role in delivering the mass spectrometry and metabolomics components of this nationally significant programme. You will lead the design and implementation of advanced quantitative and spatial metabolomics workflows to characterise antimicrobial uptake, intracellular accumulation and metabolic responses at bulk and single-cell resolution. Working closely with programme investigators and cross-institutional collaborators, you will ensure alignment of experimental design, data generation and analysis across work packages.

You will contribute to the development of research objectives, experimental strategies and analytical methodologies, applying state-of-the-art mass spectrometry platforms to generate high-quality, reproducible data. The role requires initiative and scientific creativity, including identifying opportunities to extend analytical capabilities and contribute to the strategic direction of the programme.

The role is based in the School of Pharmacy, University of Nottingham, within the Centre for Analytical Bioscience, which provides access to advanced mass spectrometry infrastructure and a vibrant, collaborative research environment committed to supporting career progression and professional development.

To find out more about the School of Pharmacy, please see our [website](#).



	Main responsibilities (Primary accountabilities and responsibilities expected to fulfil the role)	% time per year
1	Research Leadership and Delivery: <ul style="list-style-type: none">Lead the design and delivery of research within the mass spectrometry and metabolomics work packages of a £5M BBSRC sLoLa programme.Develop and apply advanced quantitative and spatial metabolomics approaches to investigate antimicrobial uptake, intracellular accumulation and metabolic responses in Gram-negative bacteria.Take ownership of a defined research area, contributing to hypothesis generation, experimental design and scientific direction.Work closely with investigators and collaborators across partner institutions to ensure alignment of experimental strategies and integration of results.Proactively resolve scientific and technical challenges and contribute to high-quality research outputs, including publications, reports and future funding applications.	50 %
2	Experimental Platforms, Data Analysis and Integration: <ul style="list-style-type: none">Lead the application and optimisation of advanced mass spectrometry platforms (e.g. Orbitrap LC-MS, triple quadrupole LC-MS/MS, AP-MALDI-MS, OrbiSIMS) to address programme objectives.Develop robust and reproducible analytical workflows for targeted, untargeted and spatial metabolomics.Conduct advanced data analysis and integrate metabolomics datasets with complementary biological and modelling data to generate mechanistic insight.Ensure high standards of data quality, reproducibility and experimental rigour across all aspects of the work.	35%
3	Supervision, Collaboration and Research Environment: <ul style="list-style-type: none">Supervise and mentor PhD students and research staff within the programme, supporting their experimental design and data interpretation.Contribute to effective collaboration and knowledge exchange across the consortium and with external partners.Support the development of new research directions, follow-on funding opportunities and a collaborative, inclusive research environment.	15%
4	Other: <ul style="list-style-type: none">Any other duties appropriate to the grade and level of the role	N/A



Person specification

	Essential	Desirable
Skills	<ul style="list-style-type: none"> ▪ Proven expertise in advanced mass spectrometry, including targeted quantitative LC-MS/MS (e.g. triple quadrupole-based systems) and high-resolution MS (e.g., Orbitrap-based systems). ▪ Demonstrable experience in both targeted and untargeted metabolomics workflows, including experimental design, sample preparation, LC-MS method development and optimisation. ▪ Strong computational and statistical data analysis skills for mass spectrometry datasets, including multivariate analysis (e.g., PCA, OPLS-DA), metabolite identification and pathway analysis. ▪ Proficiency in R programming and/or specialist software platforms (e.g., Compound Discoverer, Analyst, MetaboAnalyst or equivalent). ▪ Ability to critically interpret complex datasets and integrate findings with complementary biological or mechanistic studies. ▪ Excellent written and verbal communication skills, with evidence of preparing manuscripts for peer-reviewed publication and presenting research at conferences. ▪ Ability to plan and prioritise work effectively to meet programme milestones and deadlines within a multi-investigator research environment. ▪ Demonstrated ability to collaborate effectively within multidisciplinary and multi-institutional research teams. 	<ul style="list-style-type: none"> ▪ Experience in spatial metabolomics, imaging mass spectrometry or surface MS techniques (e.g. AP-MALDI, SIMS). ▪ Familiarity with bacterial cell culture, membrane biology or biofilm systems. ▪ Working knowledge of machine learning approaches applied to mass spectrometry datasets. ▪ Familiarity with bioanalytical method validation and quality control frameworks.
Knowledge and experience	<ul style="list-style-type: none"> ▪ Experience developing or adapting analytical methodologies 	<ul style="list-style-type: none"> ▪ Experience integrating metabolomics data with



	<p>to address novel scientific questions.</p> <ul style="list-style-type: none"> ▪ Track record of publishing research in peer-reviewed journals and experience presenting research at national or international scientific meetings. ▪ Experience contributing to large collaborative research projects. ▪ Evidence of independent problem-solving and scientific initiative within a research programme. 	<p>microbiology, bacterial genetics, systems biology or mathematical modelling.</p> <ul style="list-style-type: none"> ▪ Experience mentoring or supervising undergraduate or postgraduate students. ▪ Experience contributing to research funding applications. ▪ Recognition through external peer review (e.g. conference prizes, invited talks).
<p>Qualifications, certification and training (relevant to role)</p>	<ul style="list-style-type: none"> ▪ PhD (or near completion) in metabolomics, analytical chemistry, mass spectrometry, or a closely related discipline. 	





Expectations and behaviours

The University has developed a clear set of core expectations and behaviours that our people should be demonstrating in their work, and as ambassadors of the University's strategy, vision and values. The following are essential to the role:

- Valuing people** Is friendly, engaging and receptive, putting others at ease. Actively listens to others and goes out of way to ensure people feel valued, developed and supported.
- Taking ownership** Is clear on what needs to be done encouraging others to take ownership. Takes action when required, being mindful of important aspects such as Health & Safety, Equality, Diversity & Inclusion, and other considerations.
- Forward thinking** Drives the development, sharing and implementation of new ideas and improvements to support strategic objectives. Engages others in the improvement process.
- Professional pride** Is professional in approach and style, setting an example to others; strives to demonstrate excellence through development of self, others and effective working practices.
- Always inclusive** Builds effective working relationships, recognising and including the contribution of others; promotes inclusion and inclusive practices within own work area.

Key relationships with others

