

Candidate Information

Position:	Research Fellow in Quantitative Interaction Proteomics and Chemoproteomics
School/Department:	School of Biological Sciences
Reference:	24/111716
Closing Date:	Monday 8 April 2024
Salary:	£37,841 - £45,148 per annum
Anticipated Interview Date:	Tuesday 23 April 2024
Duration:	Fixed Term Contract for 21 months (expected start date by 1 June 2024)

JOB PURPOSE:

An experienced and motivated postdoctoral scientist is sought to join the Collins Lab (<https://collinslab.net/>) in the School of Biological Sciences at Queen's University Belfast. The successful candidate will undertake a senior role in the planning and delivery of research activity focused on quantitative interaction proteomics and data independent acquisition (DIA) mass spectrometry. Our research group focuses on (i) development of new methodology in DIA mass spectrometry^{1,2}, (ii) methods to characterize dynamic reorganization of protein complexes/interactions using both targeted and global approaches^{3,4}, and most recently (iii) the application of these methods in chemical biology and drug discovery, and (iv) the application of these methods to problems in various disease settings including innate immunity, cancer, and host-pathogen interactions. This role will focus on the development and application of strategies to quantify protein complex reorganization in signalling systems. This will include of neo protein-protein interactions by chemical induced proximity relevant in the context of early-stage drug discovery. The successful candidate will have a demonstrated track record in mass spectrometry-based proteomics research with an excellent PhD degree awarded and strong publication record. The successful applicants will have responsibilities in independent research, supervision, planning, day-to-day lab management, collaborations, and outreach. The role will include access to newly established capability within the new Chemoproteomics Centre of Excellence situated within QUB (<https://bit.ly/chemoprot>).

References: 1 Meier, F. et al. Nature Methods 17, 1229 (2020) 2 Collins, B. C. et al. Nature Communications 8, 291 (2017) 3 Collins, B. C. et al. Nat Meth 10, 1246 (2013) 4 Heusel, M. et al. Cell Systems 10, 133 (2020)

MAJOR DUTIES:

1. Develop, plan, and deliver research in the area of quantitative interaction proteomics using both targeted (affinity purification based) and global (co-fractionation based) strategies applied to cellular signalling systems. This will include chemically induced protein-protein interactions.
2. Assist in method development and maintenance of advanced liquid chromatography mass spectrometry instrumentation (primarily diaPASEF measurements using Bruker timsTOF Pro/HT couple to nanoElute 2 or Evosep One).
3. Participate in method development in the area of protein complex separations, affinity purification, sample preparation, and automation (OpenTrons OT-2)
4. Contribute research effort to support selected collaborations with various research groups within and outside of QUB in the area of quantitative proteomics.
5. Present regular progress reports on research to members of the research group or to external audiences to disseminate and publicise research findings.
6. Contribute to the supervision and training of post-graduate/undergraduate students and visiting researchers.
7. Prepare, in consultation with supervisors, material for publication in scientific journals and presentations at national and international conferences.
8. Assist group leader in the preparation of funding proposals and applications to external bodies.
9. Carry out routine administrative tasks associated with the research projects/group to ensure that projects are completed on time and within budget and that the group functions efficiently. These might include organisation of project/group meetings and documentation, financial control, stock management/procurement, risk assessment of research activities.

10. Carry out routine administrative tasks associated with the day-to-day running of the research group in a communal lab setting.
11. Read academic papers, journals and textbooks to keep abreast of developments in own specialism and related disciplines.

ESSENTIAL CRITERIA:

1. Have or about to obtain* a PhD in quantitative proteomics, mass spectrometry, or a related discipline (* within 3 months of commencement of post).
2. Substantial relevant research experience in developing and applying mass spectrometry-based quantitative proteomics methods.
3. Peer reviewed publications or preprints in the area of mass spectrometry-based proteomics.
4. Experience in the general maintenance and technical troubleshooting of mass spectrometry instruments.
5. Experience in sample preparation and separations for mass spectrometry-based proteomics.
6. Practical experience in processing, recording and handling data sets, and performing statistical analysis.
7. Strong publication record in peer reviewed journals.
8. Experience with data analysis using scripting (e.g. R, python, unix).
9. Ability to contribute to broader management and administrative processes.
10. Methodical approach to project management and meticulous in regard to experimental procedures and record keeping.
11. Sufficient breadth and depth of specialist knowledge in the discipline and of research methods and techniques to work within established research programmes.
12. Competent in giving effective and informative oral and poster presentations.
13. Ability to communicate complex information clearly.
14. Ability to build contacts and participate in internal and external networks.
15. Strong ability to work from own initiative and to work independently within the context of a research team.
16. Commitment to high quality research.
17. Demonstrable intellectual ability.
18. Ability to assess and organise resources.
19. Irregular hours including evening, weekend and other out-of-hours work may be a component of the research at times.
20. Must be willing to travel to national and international meetings and collaborative laboratories as required on an ad-hoc basis

DESIRABLE CRITERIA:

1. Experience studying protein-protein interactions or cellular signalling using mass spectrometry.
2. Experience with native protein complex fractionation techniques such as size exclusion chromatography.
3. Experience study post translational modifications using mass spectrometry.
4. Experience with cell culture.
5. Experience with standard cloning techniques and generation of stable cell lines expressing fusion proteins.
6. Experience without robotic sample preparation.
7. Evidence of having presented at conferences (poster and/or oral presentations).