Candidate Information

Position:	Research Fellow (Stem Cell Epigenetics)
School/Department:	School of Medicine, Dentistry and Biomedical Sciences
Reference:	25/112478
Closing Date:	Monday 28 April 2025
Salary:	£39,922 per annum
Anticipated Interview Date:	Friday 9 May 2025
Duration:	2 Years

JOB PURPOSE:

We are inviting applications for a Research Fellow position, funded by a prestigious Leverhulme Trust Grant. This role provides an exciting opportunity to contribute to a cutting-edge project exploring the interplay between epigenetics and metabolism in embryonic stem cells (ESCs).

Under the supervision of Dr. Yaser Atlasi at the Patrick G. Johnston Centre for Cancer Research, Queen's University Belfast, the successful candidate will employ state-of-the-art epigenomics approaches to map the genomic distribution of the understudied epigenetic mark, H3R17me2a, in ESCs and in response to metabolic changes. Additionally, the Fellow will investigate how H3R17me2a deposition is regulated by the transcription factor SPIC in ESCs and during lineage differentiation.

This project is conducted in collaboration with Dr. Ana Boskovic at EMBL Italy, where the role of the SPIC-H3R17me2a axis will be studied in the context of developing mouse embryos. This collaboration offers the successful applicant exceptional access to expertise, resources, and mentorship, fostering a dynamic and supportive research environment.

MAJOR DUTIES:

1. Perform Cut&Run to map the genomic distribution of H3R17me2a in different states of ESCs and during stem cell differentiation.
2. Map the genomic distribution of H3R17me2a in response to activation of Betaine-metabolism.
3. Generate CRISPR-KO models for key interactors of SPIC and examine their contribution to H3R17me2a deposition.
4. Analyse and integrate the genomic and transcriptomic data with available ChIP-seq and RNA-seq data in the lab to address the link between H3R17me2a and gene expression, and to Identify target genes regulated by the SPIC-H3R17me2a axis.
5. Culture and maintain mouse and human ESCs models.
6. Share findings and coordinate research efforts within a multidisciplinary team.
7. Prepare high-quality research manuscripts for publication in peer-reviewed journals.
8. Attend and present findings at national and international conferences.
9. Engage in seminars and workshops to disseminate research outcomes.
10. Assist in training and supervising undergraduate or graduate students within the research group.
11. Ensure compliance with laboratory safety protocols and ethical guidelines.
12. Document experimental methods, results, and analyses comprehensively and accurately.

ESSENTIAL CRITERIA:

1. Hold or be about to obtain* a PhD in Molecular biology, Biochemistry, genomics, or a related discipline (*PhD to be completed within 3 months of the closing date for the post).
2. Expertise in maintaining and manipulating stem cell models.
3. Experience in high-throughput epi-genomics assays or related technologies.
4. Proficiency in genome editing tools like CRISPR/Cas9 for functional validation.
5. Experience with tools and pipelines for analysing next-generation sequencing (NGS) data.
6. Handling genomic, epigenomic, and transcriptomic datasets.

7. Understanding of chromatin biology, and related technologies such as chromatin accessibility (e.g., ATAC-seq), histone modification assays (e.g., ChIP-seq).
8. Skilled in presenting scientific findings clearly, both in written reports and oral presentations.
9. Proven ability to develop and optimise experimental protocols for high-throughput or innovative laboratory techniques.
10. Strong foundation in cellular and molecular biology techniques, including the use and maintenance of cell culture systems.
11. Proficiency in analysing experimental data using standard statistical tools and visualising complex datasets.
12. Demonstrated capacity to troubleshoot experimental workflows and address technical challenges effectively.
13. Ability to work collaboratively in multidisciplinary teams, contributing to shared research objectives and outcomes.
14. Ability to contribute to broader management and administrative processes.
15. Team worker, highly motivated, supportive of junior colleagues within the group.
16. Sufficient breadth and depth of specialist knowledge in the discipline and of research methods and techniques to work within established research programmes.
17. Ability to communicate complex information clearly.
18. Ability to build contacts and participate in internal and external networks.
19. Motivated, and driven, who takes initiative in addressing challenges, proposing solutions, and driving projects forward.
20. Persistence in the face of setbacks, with the ability to learn from failures and refine approaches.
21. Receptive to feedback, new ideas, and alternative perspectives, fostering continuous learning and improvement.
22. An appreciation for cultural and academic diversity, with the ability to thrive in international or cross-institutional settings.
23. Willingness to work irregular hours when necessary for the progress of the research project.

DESIRABLE CRITERIA:

1. 1st Class undergraduate degree in genetics, biochemistry, molecular biology, or related discipline.
2. Direct experience with mouse or human ESCs.
3. Knowledge of stem cell biology.
4. Advanced data visualisation and statistical modelling using tools like R, Python, or MATLAB.
5. Familiarity with tools and programming languages (e.g., R, Python, or others) for advanced data analysis and modelling.
6. Evidence of mentoring students, colleagues, or team members in experimental design or data interpretation.
7. Capacity to adapt to emerging technologies or methods and contribute to their implementation within a research setting.
8. Experience working in international or cross-institutional partnerships, particularly with shared resources or diverse expertise.
9. Experience of undergraduate and postgraduate research supervision / mentorship.
10. Contribute to the School’s outreach programme by links with industry, community groups etc.
11. Experience of working within multi-institutional collaborative studies.
12. Experience of public communication of science to lay audiences.