Candidate Information

Position:	Research Fellow (Cancer genomics and healthcare data)
School/Department:	School of Medicine, Dentistry and Biomedical Sciences
Reference:	25/112467
Closing Date:	Monday 7 April 2025
Salary:	£39,922 per annum
Anticipated Interview Date:	Thursday 17 April 2025
Duration:	Available until 31 March 2026

JOB PURPOSE:

We are seeking an exceptional Postdoctoral Bioinformatician/Data Scientist to accelerate interdisciplinary omics and data-driven cancer research at the interface between the Patrick G Johnston Centre for Cancer Research (PGJCCR). Working as part of a unique multi-disciplinary team at the interface between PGJCCR, Momentum 1.0 (M1.0) One Health Hub and the Future Medicines Institute (FMI). The post offers a unique opportunity to help shape the foundations of a sustainable omics and data-science infrastructure, inform future grant applications (EPSRC, MRC, BBSRC, EU, Wellcome), and gain significant career development opportunities to work across academic, clinical and industry settings.

An initial focus will be on understanding treatment induced persistence in colorectal cancer patients treated with 5FU-based chemotherapy. The role will contribute to integrative analysis of a unique suite of pre-clinical multi-modal functional genomics datasets (CRISPR, RNA-seq, ChIP-seq, Mass-Spec, single-cell and spatial RNA-seq) related to models of treatment persistence and resistance, and their integration with patient-related omics data for the identification of novel targetable vulnerabilities and/or predictive biomarkers. The position will also support broader research initiatives within the centre, including parallel studies in men with locally advanced prostate cancer undergoing radiotherapy, and contribute to the development of Secure Data Environments (SDEs) for cancer and other disease research.

MAJOR DUTIES:

1. Curation and integration of pre-clinical "omics" datasets in models of treatment resistance and persistence in CRC and PCa.
2. Facilitate the integration of key pre-clinical and biomarker studies with CRC and prostate cancer use case data to enhance research outcomes.
3. Employ novel integrative data analysis approaches, including machine learning and other AI methodologies, to extract actionable insights from complex datasets.
4. Develop a personal research agenda within the project's scope, contributing to the team's efforts and advancing your expertise.
5. Contribute to projects that develop and apply novel genomics workflows, such as spatial transcriptomics, and integrate these with other 'omics' tools for comprehensive data analysis.
6. Manage, process, and maintain large-scale datasets from both in-house projects and public repositories, ensuring data integrity and accessibility.
7. Provide direction, training, and support to staff and students, ensuring high-quality research outputs and adherence to project timelines.
8. Stay abreast of scientific and technological advancements in cancer genomics to develop and implement cutting-edge analysis pipelines for various NGS experiments.
9. Establish and maintain collaborative relationships with project partners to facilitate knowledge exchange and project progress.
10. Support the writing of research manuscripts, ensuring timely dissemination of research findings and taking a leadership role in publication efforts.
11. Present research progress and findings regularly to both internal and external audiences, promoting the project's impact and fostering collaboration.

12. Proactively seek funding opportunities, writing and submitting grant proposals for fellowships, project support, and travel, contributing to the project's sustainability and growth.
13. Represent the project at national and international meetings, showcasing research achievements and networking with the broader scientific community.
14. Assist the grant holder with the preparation of funding proposals and progress reports, ensuring compliance with external funding body requirements.
15. Participate in the development and delivery of educational courses related to the project's research themes, keeping users informed of new technologies and analysis techniques.
16. Supervise students within your area of expertise, under academic supervision, to develop your supervisory skills.
17. Perform routine administrative tasks associated with the research project(s), such as organising meetings and managing project documentation and finances, to ensure the project's objectives are met within the allocated budget.
18. Engage in continuous learning by reading academic literature to remain informed about developments in your specialism and related fields.
19. Undertake any other reasonable duties that fall within the scope of the post and your competencies, as required by the project's evolving needs.

ESSENTIAL CRITERIA:

1. Hold or be about to obtain* a PhD in Cancer Bioinformatics (*must be obtained within 3 months of the closing date for the post).
2. Significant, relevant research experience with demonstrated expertise in the analysis of healthcare and/or 'omics' data, especially within the context of cancer research.
3. Experience in omics based research of colorectal cancer.
4. A track record of senior author publications appropriate to the career stage.
5. Proficiency in programming languages commonly used in bioinformatics and data-science, such as Python, R, Perl, and Shell scripting, is essential.
6. Experience in data processing and utilising open-source Omics software and packages, including Bioconductor and Python packages.
7. Experience with the analysis, integration and interpretation of large Omics datasets, including working with public genomic databases, is required. Familiarity with downstream analysis and the integration of multi-omics data is also crucial.
8. Experience in providing guidance and support to staff, collaborators, and students, contributing to their development and training, particularly in methodologies developed within functional genomics groups.
9. A collaborative attitude, capable of working effectively within an interdisciplinary team.
10. Sufficient breadth and depth of specialist knowledge in the discipline and of research methods and techniques to work within established research programmes.
11. Ability to communicate complex information clearly.
12. Ability to build contacts and participate in internal and external networks.
13. Evidence of having presented work at national and international conferences (poster and/or oral).
14. A track record of innovation in genomics research, with a commitment to advancing cancer treatment and patient care.
15. Demonstrable intellectual ability.
16. Ability to assess and organise resources.
17. Team worker, highly motivated, supportive of junior colleagues within the group.
18. Demonstrates attention to detail and works to exceptional levels of accuracy whilst under pressure.
19. Be capable of using own initiative.
20. Ability to plan own work schedule responding to new pressures and adjusting priorities.
21. Must demonstrate a true commitment to and interest in research.
22. Must be willing to work irregular hours when necessary for the progress of the research project.
23. Must be willing and able to travel to national and international meetings.

DESIRABLE CRITERIA:

1. Undergraduate degree in Medicine, science, mathematics or computer science or related subject.
2. Experience with cloud computing, AI/ML techniques, and large-scale genomic datasets.
3. Experience with downstream analysis and integration and interpretation of mulit-iomics date.
4. Significant experience designing, developing, managing, and analysing NGS methodologies, technologies, and data.
5. Significant relevant experience with end-to-end analysis and interpretation of genomic datasets generation and analysis (For example Exomes, genomes, ChIP-seq, RNA-seq, ATAC-seq).

6. Cancer research experience.
7. Experience integrating genomic data from human and mouse models.
8. Single cell genomics experiences.
9. Spatial genomics experience.
10. CRISPR Screen experience.
11. Experience developing, managing and deploying HPC genomics pipelines.
12. Use of computer clustering, parallelisation and job scheduling (e.g., LSF, PBS, SGE, SLURM).
13. Experience developing cloud genomics workflows.
14. Machine learning, deep-learning, AI experience.
15. Coding experience in:
    - R/R-Studio/Shiny
    - Python
    - Shell Scripting
    - PERL
16. Experience of compliance with data protection policies.
17. Experience of delivering lectures / tutorials.