Candidate Information

Position:	Research Fellow (Computational Genomics & AI
School/Department:	School of Biological Sciences
Reference:	25/112709
Closing Date:	Monday 11 August 2025
Salary:	£41,519 per annum.
Anticipated Interview Date:	Thursday 21 August 2025
Duration:	12 months or until 31August 2026, whichever is soonest

JOB PURPOSE:

The Creevey Research Group at Queen's University Belfast is seeking an exceptional Research Fellow to join a cutting-edge project funded by the Defence and Security Accelerator. This interdisciplinary collaboration with the University of Lincoln and University of Liverpool focuses on developing innovative computational approaches that integrate advanced genomic analysis with state-of-the-art artificial intelligence methodologies.

The successful candidate will work at the forefront of computational biology, developing novel approaches for large-scale genomic data analysis and contributing to the advancement of AI applications in biological sciences. This role presents a unique opportunity to work with pangenomic datasets while exploring the application of Large Language Models (LLMs) and machine learning techniques to address complex biological questions with significant societal impact.

The position offers the opportunity to contribute to groundbreaking research that will advance our understanding of microbial genomics and develop computational tools with broad applications in biotechnology and biosecurity. The role involves collaboration with leading researchers across multiple institutions and will contribute to the UK's strategic capabilities in genomic sciences and artificial intelligence.

MAJOR DUTIES:

1. Genomic Data Management & Analysis:
   - Identify, curate, and process large-scale genomic datasets from multiple sources and databases.
   - Implement quality control procedures and data preprocessing pipelines for diverse genomic data types.
   - Develop and maintain comprehensive data catalogues with appropriate metadata standards.
2. Computational Method Development:
   - Design and implement novel computational approaches for genomic data tokenisation and representation.
   - Develop algorithms suitable for integration with machine learning and AI frameworks.
   - Create robust, scalable bioinformatics workflows and pipelines.
3. AI Integration & Collaboration:
   - Collaborate closely with AI/ML specialists to optimise data preparation for Large Language Model applications.
   - Work iteratively to refine data tokenisation approaches based on model performance feedback.
   - Contribute to the development of novel AI approaches for genomic analysis.
4. Research Output & Dissemination:
   - Prepare high-quality research publications for peer-reviewed journals.
   - Present research findings at scientific conferences and meetings.
   - Develop comprehensive documentation and user guides for computational tools and workflows.
5. Project Management & Collaboration:
   - Coordinate research activities across multiple work packages.
   - Liaise with collaborators at partner universities (Lincoln and Liverpool).
   - Monitor progress and ensure timely delivery of project milestones and deliverables.

6. Training & Mentorship:
   - Supervise and mentor undergraduate and postgraduate students.
   - Contribute to the training of other research team members.
   - Share expertise in computational genomics and bioinformatics methodologies.
7. Professional Development:
   - Engage with the broader research community through networking and collaborations.
   - Develop funding proposals and contribute to grant applications.
   - Participate in professional development activities and training opportunities.

ESSENTIAL CRITERIA:

1. *Have or about to obtain a PhD degree in Computer Science, Computational Biology or other relevant discipline (*must be obtained within 3 months of commencement of employment).
2. Extensive experience in handling and analysing large-scale genomic datasets.
3. Demonstrated experience in developing bioinformatics pipelines and computational workflows.
4. Track record of publications in computational biology or related fields appropriate to career stage.
5. Experience with pangenomic analysis tools and methodologies.
6. Experience with version control systems (Git) and reproducible research practices.
7. Advanced programming skills in Python, R, or other languages suitable for large-scale data analysis.
8. Strong knowledge of bioinformatics tools and databases.
9. Excellent organisational and project management skills.
10. Ability to work independently and as part of an interdisciplinary team.
11. Excellent written and oral communication skills.
12. Ability to present complex computational and biological concepts to diverse audiences.
13. Strong scientific writing skills for publication and grant applications.
14. Collaborative mindset and ability to work effectively in interdisciplinary teams.
15. Strong analytical and problem-solving abilities.
16. Intellectual curiosity and enthusiasm for cutting-edge research.
17. Adaptability and resilience in a rapidly evolving research environment.
18. Willingness to travel for collaborative activities with partner institutions.
19. Ability to work with sensitive data and maintain appropriate security protocols.
20. Commitment to open science principles and collaborative research practices.
21. he successful candidate must be willing to undergo a security check with the Ministry of Defence (MOD). Any offer of employment will be conditional upon the receipt of satisfactory security clearance from the MOD.

DESIRABLE CRITERIA:

1. Experience with machine learning frameworks and their application to biological data.
2. Experience with Large Language Models (LLMs) or other AI/ML approaches applied to biological data.
3. Experience working with high performance computing environments.
4. Knowledge of microbial genomics and related databases.
5. Experience in collaborative, multi-institutional research projects.
6. Knowledge of machine learning frameworks (TensorFlow, PyTorch, etc.
7. Experience with cloud computing platforms and containerisation technologies.
8. Familiarity with data visualisation and statistical analysis techniques.
9. Understanding of FAIR data principles and modern data management practices.
10. Experience in public engagement and science communication.
11. Ability to communicate with both technical and non-technical stakeholders.
12. Leadership potential and mentoring capabilities.
13. Innovation mindset and creativity in approach to research challenges.
14. Understanding of ethical considerations in genomic research and AI applications.
15. Awareness of biosecurity and responsible research practices.

ADDITIONAL INFORMATION:

Informal enquiries can be directed to: Lucy Dillon - l.dillon@qub.ac.uk.