Candidate Information

Position: Research Fellow - Systems Biology & Disease Models
School/Department: Institute for Global Food Security
Reference: 20/108408
Closing Date: Monday 30 November 2020
Salary: £33,797 per annum
Anticipated Interview Date: Tuesday 15 December 2020
Duration: Available for 12 months

JOB PURPOSE:

To be an active member of the research project/team assisting in the development of research proposals and the planning and delivery of the research activity within a specified area so that the overall research objectives of the project/school are met.

MAJOR DUTIES:

1. Develop and plan an area of personal research and expertise, and/or undertake research under supervision within a specific research project or as a member of a research team.
2. The long-term objective of our research is to define the genetic architecture of OUD in a rodent model and uncover new insights into this disease pathophysiology. To accomplish this, we are using a rat behavioural model of excessive opioid intake that exhibits both face and construct validity for dysregulated drug intake associated and opiate dependence.
3. This project will employ advanced behavioural models to screen outbred rats for vulnerability or resistance to the development of compulsive opiate self-administration at two distinct geographical research sites in the USA and Italy.
4. High-throughput (HT) genetic analyses will uncover variants associated with these behavioral phenotypes, and integrative genomic studies will confirm the functional significance of the gene variants.
5. This project will perform an integrated Genomic Characterization. The successful candidate will test the hypothesis that transcriptomic regulation of these variants in defined brain regions (amygdala, hippocampus, prefrontal cortex, nucleus accumbens and ventral tegmental area) results in functional differences that are associated with substance abuse. He/She will examine the functional impact of the genetic variants. The genomic impact will be assessed via RNA sequencing to assess gene expression and map expression quantitative trait loci (eQTLs). Chromosome conformation capture (3C) will be used to physically link an eQTL with its target gene, assigning causality to a variant and its regulated gene.
6. Design, develop and refine experimental apparatus, field research or experiments in order to obtain reliable data.
7. Carry out analyses, critical evaluations, and interpretations using methodologies and other techniques appropriate to area of research.
8. Present regular progress reports on research to members of the research group or to external audiences to disseminate and publicise research findings.
9. Prepare, often in consultation with supervisor, material for publication in national and international journals and presentations at international conferences.
10. Assist grant holder in the preparation of funding proposals and applications to external bodies.
11. Carry out routine administrative tasks associated with the research project/s to ensure that project/s are completed on time and within budget. These might include organisation of project meetings and documentation, financial control, risk assessment of research activities.
12. Carry out occasional undergraduate supervision, demonstrating or lecturing duties within the post holder's area of expertise and under the direct guidance of a member of academic staff.
13. Read academic papers, journals and textbooks to keep abreast of developments in own specialism and related disciplines.

Planning and Organising:

1. Plan for specific aspects of research programmes. Timescales range from 1-6 months in advance and contribute to research group planning.

2. Plan for the use of research resources, laboratories and workshops where appropriate.
3. Plan own day-to day activity within framework of the agreed research programme.
4. Plan up to a year in advance to meet deadlines for journal publications and to prepare presentations and papers for conferences.
5. Coordinate and liaise with other members of the research group over work progress.

Resource Management Responsibilities:
1. Ensure research resources are used in an effective and efficient manner.
2. Provide guidance as required to support staff and any students who may be assisting with research.

Internal and External Relationships:
1. Liaise on a regular basis with colleagues and students.
2. Build internal contacts and participate in internal networks for the exchange of information and to form relationships for future collaboration.
3. Join external networks to share information and ideas.
4. Contribute to the School's outreach programme by establishing links with local community groups, industries etc.

ESSENTIAL CRITERIA:
1. Have or be about to obtain a relevant PhD (e.g. in genomics, molecular biology, neuroscience).
2. At least 3 years recent relevant research experience to include:
   •Experience using RNA sequencing to assess gene expression and map expression quantitative trait loci (eQTLs).
   •Experience with using a cryostat to generate tissue sections from defined brain regions, e.g. (amygdala, hippocampus, prefrontal cortex, nucleus accumbens.
3. Experience in one of the following areas:
   •Experience with analysing genes expression in the brain or neural tissue using. RNA sequencing,
   •Experience with reduced reduction bisulfite sequencing (RRBS)
   •Experience using Chromosome conformation capture (3C) to physically link an eQTL with its target gene, assigning causality to a variant and its regulated gene
   •Experience making Illumina sequencing libraries (particularly from low input nucleic acid amounts)
4. Publication record commensurate with career stage.
5. Contribute to general culture of the laboratory, particularly passing on skills to new members.
6. Familiarity with outbred animal model of opioid or other SUD self-administration.
7. Familiarity with behavioral phenotypes consistent with vulnerable and resistant opioid or other SUD addiction subpopulations.
8. An interest in substance abuse research.
9. Ability to communicate complex information clearly.
10. Ability to build contacts and participate in internal and external networks.
11. Demonstrable intellectual ability.
12. Ability to assess and organise resources.
13. Effective interpersonal skills and a positive attitude towards students and colleagues.
14. High level of analytical capability.
15. Ability to manage own work effectively.
16. Ability to travel to project meetings in the UK, EU and internationally is needed minimum once per year.

DESIRABLE CRITERIA:
1. Master'as Degree or equivalent qualification in a related subject.
2. Experience analysing data from immune based assays, mammalian cell culture, rodent and aquatic animal models, qPCR analyses, flow cytometry analysis.
3. Previous experience in single-cell RNA-sequencing or RNA sequencing of defined brain regions and bioinformatics analyses of large sequencing datasets.
4. Research experience in bioinformatics and analyses of genome-wide data (for example, single cell RNA sequencing, whole genome sequencing, GWAS, eQTL, AI methods, RNA-sequencing).
5. Experience with RNAseq data analysis pipelines.
6. Evidence of having presented at conferences (poster and/or oral presentations).