

JOB DESCRIPTION

Job Title:	Bioinformatician (NRI)	Grade: AC2/3	Job Reference No: N/A
Department:	Agriculture, Health and Environment (AHED)	Date of Job Evaluation:	N/A
Role reports to:	Head of Molecular Virology and Entomology Research Group (Prof. Susan Seal), Agriculture, Health and Environment Department (AHE)		
Direct Reports	None		
Indirect Reports:	None		
Other Key contacts:	Prof. John Colvin (project leader), Dr Jeremy Hagggar (Head of Department)		

PURPOSE OF ROLE: The Bioinformatician will analyse next generation sequence data of the whitefly *Bemisia tabaci* generated under a Bill and Melinda Gates Foundation funded whitefly project entitled “African cassava whitefly: Outbreak causes and sustainable solutions” (The Whitefly Project). A key component to the success of this project will be the sequencing and *de novo* assembly of the African cassava whitefly genome and that of related *Bemisia tabaci* populations. The unusually large size of the whitefly genome (~1 GB), as well as repeat content and heterozygosity have to date complicated obtaining a reliable draft *B. tabaci* reference genome.

The bioinformatician will assemble, annotate and carry out other analyses on transcriptomic as well as genomic data in close collaboration with the European Bioinformatics Institute (EBI, Cambridgeshire, UK), and the University of Western Australia (Perth, Australia). Data will be shared with the other 12 research partners of the project based in East Africa, China, Colombia, Israel and the USA.

On a daily basis the bioinformatician will work in collaboration with existing PhD students at NRI and the EBI to study particular gene families of interest, as well as assist in the design and execution of molecular biology experiments (PCR, qPCR, sequencing) to verify particular assemblies and sequence variations identified.

The successful candidate must have proven experience of handling large next generation sequence datasets, and the necessary skill set to validate assemblies using different software, annotate target gene families and obtain full-length genes and promoter sequences. Excellent scientific writing skills are an essential requirement of the post, as is the ability and willingness to undertake short term national as well as international travel. Experience in relevant molecular biology laboratory techniques will be considered an advantage.

This position offers exciting opportunities, both to work as part of a large global team aiming to find sustainable control strategies to the African cassava whitefly, as well as to play a major role in the set-up of bioinformatics facilities at The Natural Resources Institute (www.nri.org).

KEY ACCOUNTABILITIES:

Team Specific:

- Work with multidisciplinary scientists at the NRI, EBI and UWA to analyse whole genome and transcriptome sequence data, and set up collaborative working plans
- Implement bioinformatics pipelines using high performance computing and other available tools, where pipelines may include e.g. *de novo* assembly, annotation, database query, pan-genome construction and visualisation tools, RNA-seq, phylogenetic tree reconstruction
- Assist in the set up a dedicated local server for the sequence data, with a back-up server
- Identify suitable target sequences to produce diagnostic tests for specific whitefly populations
- Assist with making annotated genome sequence available in genome browsers to consortium members
- Assist in updating assemblies and annotations and their release to project partners

Generic:

- Work with other NRI staff to ensure bioinformatics facilities support students and staff as required

Managing Self:

- Continuously improve own knowledge of people, administrative systems and University working policy
- Maintain a proactive approach to ensure that the bioinformatics research needs of the Institute are met
- Maintain own continuous professional development (CPD)
- Continuously strengthen effective interpersonal skills

Core Requirements:

- Adhere to and promote the University's Equality and Diversity policies
- Ensure compliance with Health & Safety regulations
- Support and promote the University's Sustainability policies, recognising the shared responsibility of minimising the university's negative environmental impacts wherever possible
- Work within the NRI's Quality Management System (ISO 9001:2008)

Additional Requirements:

- Ability and willingness to carry out short term (1-2 weeks) travel to collaborating African, American and Asian research institutes, and international conferences as required.
- Any other duties appropriate to the post and grade

KEY PERFORMANCE INDICATORS:

- Effectiveness of sequence data analysis
- Production and delivery of work, publications and other set tasks to agreed timescales and quality
- Contribution to team climate, equilibrium and effectiveness
- Compliance with corporate standards

KEY RELATIONSHIPS (Internal & External):

- Report directly to Head of Molecular Virology and Entomology Research Group,
- Report to PI of the Whitefly Project
- Collaborate closely with Dr Paul Kersey's team at EBI, Cambridgeshire, UK
- Work collaboratively with other NRI academic and technical staff and project partners
- (At AC3 level) Supervise postgraduate research students

PERSON SPECIFICATION

Essential	Desirable
Experience In-depth specialist knowledge in the following areas: ▪ Data analysis – experience with QC, normalization, assembly, clustering, classification, annotation and downstream analysis, familiarity and use of NGS tools and R/Bioconductor packages. ▪ Sequence bioinformatics – alignment tools, annotation of sequences/regions with genomic features, SNP identification, genome browsers/visualization. ▪ Programming/scripting – software development, web development. ▪ Bioinformatics tools and databases – practical experience of a range of bioinformatics software packages and database resources. (Note a greater level of prior experience in the specialist knowledge areas is required for a AC3 level appointment). Ability to work independently, leading specific components of projects (AC3 level).	Experience ▪ Database construction ▪ Linux administration skills ▪ Working in a molecular laboratory ▪ (At AC3 level) Proven experience of scientific writing skills by lead authorship on scientific papers. Skills ▪ Experience of insect-related experimental research
Skills	

▪ Excellent scientific writing skills ▪ Capability to understand the biological and bioinformatics needs of the project to appropriately meet the needs of PIs and research groups. Qualifications ▪ (At AC3 level) PhD in a lifescience discipline with a background in bioinformatics, or ▪ (At AC3 level) PhD in Bioinformatics with experience of working in the life sciences	
--	--