Research Assistant Post

Bioinformatics

The Molecular Diagnostics Research Group, School of Biological and Chemical Sciences

School of Biological and Chemical Sciences / College of Science and Engineering

Ref. No. University of Galway 266-22

Applications are invited from suitably qualified candidates for a full-time, fixed term Research Assistant position with the Molecular Diagnostics Research Group (MDRG), the School of Biological and Chemical Sciences (SBCS) at the University of Galway.

The position, funded by a Molecular Diagnostics company (Barcelona-based), is available from January 1st 2023 to June 30th 2023.

The Molecular Diagnostics Research Group (MDRG) at the University of Galway, directed by Professor Terry Smith, has over 30 years' experience, and an international record of accomplishment in research and the commercialisation of its research. The MDRG’s core competence and experience is in the design, development and application of molecular diagnostics tests for the diagnosis of major diseases, in particular infectious disease. The MDRG has developed a suite of platform molecular diagnostics technologies, based on proprietary nucleic acid sequence targets, for the detection and identification of pathogenic bacteria and fungi, and has worked successfully with a number of national and international commercial partners to co-develop and commercialise molecular diagnostic test products based on these platform technologies.

Research Assistant in Bioinformatics

The Position

The Molecular Diagnostics Research Group is seeking to recruit a Research Assistant with appropriate qualifications and practical experience in Computational analysis and interrogation of nucleic acid sequences for sequence characteristics suitable for nucleic acid diagnostics assay design. The post-holder will support a research programme focused on the design and development of a suite of PCR-based molecular diagnostics tests for a large range of infectious disease pathogens (bacteria, fungi and parasites) associated with sepsis. The position is available from January 1st 2023, for an initial period of 6 months.

Job Description:

The post holder shall carry out research focused on generating a database of full genome sequences downloaded from Genbank and other public access DNA sequence databases, of multiple strains / isolates from selected microbial species, as directed by the sponsoring company. From the database generated, specified microbial gene sequences from the selected species and strains, and other species and strains to be used in computational exclusivity studies, will be extracted from the total genome sequences, and subjected to DNA sequence alignment using publically available software. The sequence alignments will be used to identify suitable target regions for the design of microbial
Family, Genus and Species-specific PCR-based *in vitro* amplification assays, for subsequent laboratory testing and optimisation by other researchers.

A key element of the work to be undertake is to evaluate available software (free access public software and proprietary software) for rapid and optimal PCR primer and probe identification the microbial detection and identification, involving large numbers of organisms within a Family and / or Genus. The post is available in the first instance for 6 months, from January 1st to June 30th 2023.

**Duties:**

The post-holder will undertake duties related to the specified project to include:

- Undertake specific microbial gene sequence extraction from Genbank and other appropriate sequence databases, from multiple strains / isolates of identified bacterial species to generate a comprehensive sequence database for designated bacterial, fungal and other microbial pathogen genes used in PCR assay design and development.
- Undertake informatics-based sequence alignments on extracted gene sequences, to identify regions of homology and sequence divergence for PCR assay design.
- Investigate existing software tools and / or develop code to improve the speed and efficiency of specific gene sequence extraction from available databases for subsequent sequence alignment of closely related species.
- Explore software based methodologies for rapid and effective PCR assay design.
- Maintaining laboratory notebooks, research records and generating technical reports and experimental data as required by the project management team and Industry partner.
- Preparation and delivery of periodic reports when required for the project management team and Industry partner.
- Ensuring that project work is performed in line with Health and Safety and other relevant NUI Galway policies.
- Maintaining confidentiality of all background IP, foreground IP, and research results emerging from the project.

Other duties may be assigned by the Principal Investigator, and/or Senior Scientist and Project Manager from time to time. The post holder shall carry out the duties of the post under the direction of the Principal Investigator.

**Qualifications/Skills required:**

The successful candidate will have a BSc degree in a Science or Technology Subject such as Mathematics, Physics, or another subject involving a substantial Computational element, and an MSc. degree in an area of Genomic or Data Science involving Computational data analysis, including significant degree of Bioinformatics, including nucleic acid sequence computational analysis.

**Essential Requirements:**

- A BSc degree in a Science or Technology Subject such as Mathematics, Physics, or another subject involving a substantial Computational element.
- An MSc. degree in an area of Genomic or Data Science involving Computational data analysis, including significant degree of Bioinformatics, including nucleic acid sequence computational analysis.
• The use of a range of Bioinformatics analysis software, for Biological data analysis, including BLAST and other commonly used nucleic acid sequence analysis software.
• Practical knowledge of and experience of software programme development using well-known programming technologies (e.g. Python) for the development of user-friendly programming code that are easily used by laboratory researchers (non expert users).
• Fluency in written and spoken English is essential.

Desirable Requirements:

• Practical experience of searching public access Genome Databases (e.g. Genbank) and extracting / downloading whole genomes and specific nucleic acid (DNA) gene sequences from those databases.
• Knowledge of the process of and key requirements for the design of nucleic acid primers and probes for PCR-based nucleic acid diagnostic assay development.
• Ability to work within a multidisciplinary research team.
• Ability to successfully communicate with, and collaborate with laboratory-based Biological Sciences researchers to ensure successful information flow for assay design and development.
• Ability to train non-computationally expert laboratory researchers in use of software code developed to extract, analyse and to design PCR primers and probes for PCR assay development.

Salary: €27,380 to €31,049 per annum, pro rata for shorter and/or part-time contracts (public sector pay policy rules pertaining to new entrants will apply).

Start date: The position is available from January 1st 2023.

Continuing Professional Development/Training:
The University of Galway provides continuing professional development supports for all researchers seeking to build their own career pathways either within or beyond academia. Researchers are encouraged to engage with our Researcher Development Centre (RDC) upon commencing employment – see www.universityofgalway.ie/rdc for further information.'

Further information on research and working at University of Galway is available on Research at University of Galway

For information on moving to Ireland please see www.euraxess.ie

Further information about the School of Biological and Chemical Sciences is available at https://www.universityofgalway.ie/science-engineering/schoolofbiologicalandchemicalsciences/

Informal enquiries concerning the post may be made to Professor Terry Smith (terry.smith@universityofgalway.ie)
To Apply:
Applications to include a covering letter, CV, and the contact details of three referees should be sent, via e-mail (in word or PDF only) to Terry Smith: terry.smith@universityofgalway.ie

Please put reference number University of Galway 266-22 in subject line of e-mail application.

Closing date for receipt of applications is 5.00 pm November 3rd 2022

Interviews are expected to take place on the 23rd of November 2022

We reserve the right to re-advertise or extend the closing date for this post.

The University of Galway is an equal opportunities employer.

All positions are recruited in line with Open, Transparent, Merit (OTM) and Competency based recruitment.