Teagasc Job Specification

Animal Microbiome Research Technologist
(Ref: 944)

Competition Type: Temporary externally funded non Grant-in-Aid contract post, the indicative duration of which is 36 months, subject to contract. A panel may be formed from which future similar vacancies may be filled; such a panel will remain active for a maximum period of 12 months.

Location: Animal and Grassland Research and Innovation Centre, Teagasc, Grange, Dunsany, Co Meath, C15 PW93

Grade/Salary: Technologist Grade 1 with a Salary Scale of €38,558 to €74,094

Basic Function: The successful candidate will be based at the Animal and Bioscience Research Department, Teagasc Grange, Co. Meath. While most of the research programme will be conducted on-site performing genomics-based microbial profiling, the successful applicant will have some involvement in the collection of biological samples and recording of methane emissions and performance data on beef cattle at Teagasc Grange. In addition, some work will be conducted on dairy cattle herds at Teagasc Moorepark, Co. Cork and sheep flocks at Teagasc Athenry, Co. Galway. Tasks will involve liaising with laboratory staff, conducting genomics-based sample preparation for microbial profiling, metagenomics, host animal data collation, bioinformatics and statistical analysis. The successful candidate will also be integrally involved in postgraduate student supervision, preparation of progress reports as well as peer reviewed scientific manuscripts.

Background: The digestion of plant matter consumed by ruminant livestock (cattle, sheep etc) is facilitated by members of a microbial ecosystem residing in the rumen (forestomach). However, one group of rumen microbes, known as methanogens, are responsible for nearly 60% of Irish agricultural related greenhouse gas (GHG) emissions through the production of methane (CH4). As a result, there is an urgent need to tackle the volume of enteric CH4 emitted by Irish ruminant livestock sector. The composition of the rumen microbiome has been identified as a reliable proxy for predicting the methanogenic output ruminant livestock. Through a recent collaboration between Irish and New Zealand partners, a rumen microbial profiling (RMC) technique, aimed at facilitating the selection of low methane emitting animals, was recently identified that can predict CH4 emissions in beef cattle with a high level of accuracy (~0.7). This Technologist position is part of an Ireland and New Zealand collaborative research project called 'Methane-Predict', funded by the Department of Agriculture, Food and the Marine through the 2022 IE-NZ Joint Research Call. Methane-Predict' aims to identify and validate low-cost rapid testing of, rumen microbiome data, milk and meat samples to rank individual ruminants for enteric methane emissions across 6 diverse sheep, beef and dairy cattle populations ranging in size from 200 to 500 animals per group. The project will use a holistic multi-omics approach to compare and contrast the composition and functionality of the rumen microbiome of high and low methane emitting cattle (beef and dairy) and sheep across both Ireland and New Zealand.

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Job Objectives:

Duties & Responsibilities specific to this project:

- Assist in the management of all aspects of the agreed research programme on these animals including methane measurement in cattle and sheep.
- Develop and conduct metagenomics based laboratory procedures and liaise with laboratory staff in collaborating institutions (i.e. Teagasc, MTU, ICBF, Sheep Ireland and international partners' laboratories) to ensure effective collaborative data analysis.
- Conduct bioinformatics and statistical analysis of genomic data to assess the relationship of the rumen microbiome with ruminant methanogens and the fatty acid profile of milk and meat.
- Assist in the collection of biological samples (e.g., rumen contents, milk and meat sample) over time and from a range of animal models and record performance measurements associated with enteric emissions.
- Supervision of postgraduate students and technical staff, protocol review, and collaboration with research staff.

Additional Duties & Responsibilities:

- To interpret research findings and assist in preparing scientific and popular press publications.
- To assist Teagasc in meeting the commitments of the Quality Customer Service Charter and Action Plan.
- To comply with all relevant Teagasc policies and procedures.
- To take up additional duties as they may arise and be assigned by management.
- To actively participate in the annual business planning and Performance Management Development System (PMDS) processes.
- Fully co-operate with the provisions made for ensuring the health, safety and welfare of themselves, fellow staff and non-Teagasc staff and co-operate with management in enabling Teagasc to comply with legal obligations. This includes full compliance with the responsibilities outlined in the Safety Statement.
- Any other duties as may be assigned from time to time

** This job specification is intended as a guide to the general range of duties and is intended to be neither definitive nor restrictive. Duties and responsibilities will be reviewed with the post-holder from time to time.*

Required Skills:

	Essential	Desirable
Qualifications	• A Level 8 degree in Animal Science and/or Molecular Biology.	• A postgraduate degree (MSc. or PhD) and/or research experience in Animal Science/Molecular biology/GHG emissions would be a distinct advantage
Knowledge/ Skills	• Demonstrated research and technical expertise in animal andl/or molecular biology related sciences. • Evidence of research activity (publications, conference presentations, awards) and future scholarly output (working papers, research proposals etc) • Excellent project management, analytical, report writing and data analysis skills • Excellent communication skills (oral, written, presentation) with an ability to enable effective knowledge and technology transfer • Ability to generate new ideas, unique concepts, models and solutions	• Proven record of scientific communications. • Experience in animal science / gut or rumen microbiology • Experience in measuring methane emissions in ruminants • Experience in setting own research agenda • Evidence of teamwork and collaboration with relevant partners
Behavioural Competencies	• An ability to collaborate with team members and PhD students to help build research knowledge and skill and to guide professional development • Ability to generate new ideas, unique concepts, models and solutions	
Other	• As this role will involve driving vehicles, candidates must satisfy and continue to satisfy during employment with Teagasc, legal requirements to drive a car unaccompanied on Irish public roads	

Note: The 'essential' qualifications, knowledge, skills and behavioural competencies outlined above are 'must-have' which will be used in the selection process.