PHD POSITION IN SHEEP BREEDING FOR SUSTAINABLE PRODUCTION

Objetive

The National Agricultura Research Institute and AgResearch, leading research institutions focus on providing practical solutions to improve productivity and sustainability of the agriculture sector, are looking for a PhD candidate to work in rumen metagenomics and sheep genomics, in association with feed efficiency and enteric methane emissions.

The PhD student will be registered at the University of the Republic (Uruguay), and the thesis project is part the international project "Metagenomics of the ruminal microbiota and genetic improvement of feed conversion efficiency and enteric methane emissions in sheep. The work will be based on INIA Las Brujas (Canelones) and will be combined with sample and data analysis work in AgResearch.

Profile of the candidate

- Master's degree in bioinformatics, biotechnology or animal breeding and genetics. Other master's degrees (or equivalent) with relevant profile can be considered.
- Fluent oral and written communication skills in English.
- Experience managing and analysing large datasets.
- Expertise in Unix, R or MySQL is desirable.

Background in research projects related to the topic will be valued, as well as high motivation for research, capacity for independent and collaborative work, among other skills.

Application Procedure

Applicants must submit (i) a complete curriculum vitae highlighting their experience in scientific research (ii) a bachelor's and master's degree (or in process), and (iii) a cover letter (maximum length: 1-page A4), outlining your motivation to continue with the academic activity and your specific interest in this proposal. In turn, they must attach reference letters (2 to 3).

Those interested should send the application to the following email address: **beneficiariosbecas@inia.org.uy**, highlighting in the subject "INIA-AGRESEARCH DOCTORAL SCHOLARSHIP". The files must be sent in pdf format and must not exceed 10 MB.

Evaluation and selection

An Evaluation Committee will be formed, made up of representatives of the Human Capital Development Management and researchers from both institutions as advisers. This Committee will assess and pre-select applications based on the aforementioned formal requirements. Those preselected will be invited for personal interview.

The evaluation criteria will consider, among others, the following aspects: background of the applicant, especially his/her undergraduate and master's level of education, projects in which he/she participated, presentations at conferences, publications, academic papers, summaries or published presentations and potential contribution to the development of the strategic insertion area.

Funding, duration and dedication

The candidate selected as "Doctoral Scholarship Beneficiary" to carry out doctoral studies and the thesis work in the research project "Metagenomics of the ruminal microbiota and genetic improvement of feed conversion efficiency and enteric methane emissions in sheep", will be contracted for a non-extendable period of 36 months from the starting date (February 2023).

The selected candidate will receive a monthly nominal remuneration equivalent to 7.2 of the Institute's salary matrix for a dedication of 44 hours, with the corresponding adjustments and social benefits. The doctoral thesis must be defended within a period not exceeding 365 days from the end of the contract. Once the PhD degree has been obtained, a copy of it or proof of processing must be presented to INIA.

Registration deadlines.

Closing date for applications: November 30th, 2022

Formalization and monitoring.

The Scholarship will be formalized by signing a contract as "Doctorate Scholarship Beneficiary". At the end of the contractual relationship, the beneficiary must present documentation proving the completion of the postgraduate programme, as well as having fulfilled the delivery of the requested partial reports, a written version of the thesis, and provide a seminar/presentation linked to the PhD programme.

The beneficiary is also expected to publish at least two academic articles during the fellowship period in scientific journals relevant to the work. In turn, to participate in academic activities such as congresses and seminars, national and international, as well as all planned activities and fully comply with the requirements requested by the Human Capital Development Management.

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Research project

Developing strategies for sustainable livestock production is a main challenge, particularly for countries in which cattle and sheep productions are very relevant to national economies. Genetic improvement of feed efficiency has economic and environmental positive impacts by reducing feed costs and contributing to lower methane emissions. Animal selection for reduced methane emission is also a promising tool for mitigation of methane emissions, which will contribute to meet methane mitigation targets.

Genomic selection has revolutionized animal breeding programmes by increasing genetic gain, but also by providing a tool to achieve genetic progress in difficult/costly-to-measure traits such as feed efficiency and methane emissions. Both traits are not only related to host genetics but also to features of the rumen microbial community. The characterization of rumen microbiome by metagenomics, in combination with animal genotype, provides relevant insight to the interaction between rumen microbiota and host on feed efficiency and methane emissions, as well as a better understanding of the association between them.

This project will evaluate the impact of sheep genomic selection on sustainability by assessing the accuracy of genomic prediction for methane production and feed efficiency in sheep. The impact of using rumen microbiome sequencing for genetic improvement of both traits will also be investigated.