

## ***IRTA & THE URV ARE SEEKING A PhD student in Chemistry or similar for the Martí-Franqués research grants program – Doctoral Grants 2019.***

IRTA and URV are interested in contracting a PhD student for its Centre Mas Bové (Tarragona).

### ***Title of the project in which the PhD student will be involved***

Novel applications of NIR spectroscopy for the optimization of monogastric animal feed.

### ***Concept and approach of the project***

The latest EU's Framework programme for research and Innovation recognizes the need to enhance competitive production for food and the sustainable growth of rural territories. In farming practices, the balance of productivity and environmental sustainability goes through, among others, the optimization of the nutritive value of feeds for farm animals using local varieties of raw materials.

Research in optimal feed formulation for each type of animal (and age), requires extensive, in vivo, metabolic studies where the feeds provided to the animals and their corresponding faeces should be analysed for the main nutritive fractions (protein, fat, starch, fibre, energy, etc) and alternative relevant components such as digestible amino acids, fatty acids, metabolisable energy, specific polysaccharides, etc.

Analytical determinations are a basic part of these studies, and are numerous, expensive, time-consuming, generate chemical waste, and use a large part of the project's budget. The near infrared (NIR) spectroscopy has been extensively used for the estimation of the total contents of the nutritive main components but not to the same extent to estimate the content of other interesting nutrients.

### ***General objectives of the project.***

The general objectives of the project are:

1. Development of new NIR-based determinations and classification algorithms (PLS, PLS-DA, SIMCA, etc.) to be incorporated into the next generation of research studies in animal feed optimization.

2. Replacement of costly analytical determinations by fast, non-destructive, cheap and reagent-less determinations using NIR spectroscopy.
3. Improvement of knowledge of the digestion specific nutritive fractions of different ingredients and feeds

### ***PhD thesis project***

The PhD student will undertake research as part of the Animal Nutrition Program of IRTA and the Department of Analytical Chemistry and Organic Chemistry of the URV.

The candidate, in collaboration with a multidisciplinary team, will design and conduct research on development, validation and implementation of new NIR spectroscopy calibrations for feeds and lyophilized faeces, developing skills in (bio)chemical analysis, multivariate statistical analysis and programming of chemometric algorithms.

### ***Duration***

The duration of the PhD student contract will be for three (3) years.

### ***Remuneration***

The financial remuneration will be of € 16,127.59 gross for the first and second year. For the third year the remuneration will be of €17,279.45 gross.

Additionally, the PhD student will receive €410 every year for the enrolment to the Doctoral School.

### ***Requirements:***

Other requirements: High English level. Research experience would be a distinct advantage. Master degree.

### ***How to Apply***

Applications must be done through:

<http://www.urv.cat/ca/recerca/suport/programes/urv/programa-marti-franques/pipf/2019>  
no later than September 2<sup>nd</sup>, 2019.

Reference: 2019PMF-PIPF-62