

*IRTA is a research institute owned by the Government of Catalonia ascribed to the Ministry of Climate Action, Food and Rural Agenda. IRTA is one of the CERCA centers of excellence of the Catalan Research System. Our purpose is to contribute to the modernization, competitiveness and sustainable development of agriculture, food and aquaculture sectors, the supply of healthy and quality foods for consumers and, generally, improving the welfare and prosperity of the society. We are granted by the EU with the HRS4R distinction for "HR Excellence in Research" and thus we offer a rich environment for knowledge development and exchange where to develop a scientific career, and possibilities for professional promotion according to the attained achievements. Check our initiatives [here](#).*

## **CALL FOR POSTDOCTORAL RESEARCHERS (2<sup>nd</sup> call)**

The **Institute of Agrifood Research and Technology (IRTA)** is opening 7 postdoctoral positions in the areas of Animal Production, Plant Production and Food Industries.

***Is your research interest related to one of the following topics?***

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### **1. Development of a Knowledge Platform to collect, analyse, share and use integrated scientific and technical data on Animal Welfare.**

**IRTA Program:** Animal Welfare

**Location:** IRTA – Monells (Girona)

**Responsible Researcher:** Dr Antonio Velarde – [antonio.velarde@irta.cat](mailto:antonio.velarde@irta.cat)

**Description of the project:**

This 3-years project, coordinated by the Animal Welfare Program, is a set of activities of the European Partnership Animal Health and Welfare, aiming to develop a knowledge platform for collecting, analysing, sharing, and using integrated scientific and technical data on animal welfare. The specific objectives also include the creation of a network of relevant stakeholders, the identification of animal welfare measures, methods, protocols, tools and data and the formulation of needs for the standardization of indicators and monitoring processes. This should allow the design of a flexible data model for centralised and harmonised monitoring and surveillance of animal welfare at EU level on farms, during transport and at the slaughterhouse.

### **2. Characterization and use of the genetic diversity of Crop Wild relatives of Prunus Species.**

**IRTA Program:** Genomics and Biotechnology

**Location:** IRTA – CRAG

**Responsible Researcher:** Dr Maria José Aranzana - [mariajose.aranzana@irta.cat](mailto:mariajose.aranzana@irta.cat)

**Description of the project:**

Crop wild relatives (CWR) are wild plant taxa closely related to a crop. They represent an important source of genetic diversity for the improvement of agronomic traits. In the context of the One Health Initiative, temperate fruit trees are essential for human nutrition and health, yet CWR resources have hitherto been underused. Moreover, fruit tree long lifespan and a current production dominated by a few cultivars make them particularly vulnerable to the effects of global changes. To address this challenge, the recently funded FRUITDIV project (HORIZON-RIA action) will monitor, characterize, use, and conserve the diversity of emblematic fruit tree CWR. *Prunus ramburii* is a *Prunophora* species endemic of Sierra Nevada (Spain). The postdoctoral researcher will be in charge of the genome-wide characterization of the *Prunophora* species studied in FRUITDIV (*P. cerasifera*, *P. cocomilia* and *P. ramburii*) by high-through genotyping, the establishment of core collections, and the analysis of pangenomes. In addition, will develop bioinformatic pipelines and molecular markers and strategies for their use in breeding programs.

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### **3. Microbiological safety of foods made with ingredients from alternative protein sources.**

**IRTA Program:** Food Safety and Functionality

**Location:** IRTA – Monells (Girona)

**Responsible Researcher:** Dr Sara Bover – [sara.bover@irta.cat](mailto:sara.bover@irta.cat)

**Description of the project:**

The protein transition can reduce the environmental impact of intensive livestock production and promote healthier diets by balancing the production and consumption of proteins of animal origin and alternative protein sources. This project aims to fill the current knowledge gaps regarding (i) the sources of microbial contamination, prevalence, and traits of food-borne pathogens in alternative protein ingredients and products (ii) the behaviour of the relevant pathogens and spoilage microbiota during processing and preservation of food made with alternative proteins; and (iii) the habits and practices of end-users and consumers and the impact on the food safety and public health. Ultimately, the postdoctoral researcher will assess and develop effective strategies based on the hurdle technology to manage the microbial safety on innovative foods made with alternative protein sources.

### **4. Behaviour of foodborne vegetative and spore forming pathogens in new food processes and technologies.**

**IRTA Program:** Food Safety and Functionality

**Location:** IRTA – Monells (Girona)

**Responsible Researcher:** Dr Sara Bover – [sara.bover@irta.cat](mailto:sara.bover@irta.cat)

**Description of the project:**

This project, coordinated by the Food Safety and Functionality Program, aims to conduct research and innovation activities on the impact of emerging food processing and preservation technologies (biopreservation and fermentation, high-pressure processing, radiofrequency, drying, heating) on the behaviour of foodborne vegetative and spore forming pathogens. The postdoctoral researcher will apply quantitative approaches such as predictive modelling and quantitative microbial risk assessment.

### **5. Microbiome studies in aquatic animals.**

**IRTA Program:** Aquaculture

**Location:** IRTA – La Ràpita

**Responsible Researcher:** Dr Enric Gisbert – [enric.gisbert@irta.cat](mailto:enric.gisbert@irta.cat)

**Description of the project:**

The researcher will work on microbiome studies in aquatic organisms, especially fish (marine and freshwater species). In particular, our research Program is focusing mainly on holistically evaluating the effect of different nutritional strategies on host performance and condition. These strategies may range from the evaluation of alternative raw materials in the formulation of aquafeeds to the use validation of feed additives in functional feeds, and under those strategies we aim evaluating the role and composition of the microbiome on the host. Thus, the postdoctoral fellow will be in charge of microbiome studies from sample collection to bioinformatic analysis and interpretation of biological and functional results. The

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researcher will collaborate with different researchers working on aquatic animal nutrition, health, and welfare.

## 6. Application of Digital Twins to monitoring and management of agricultural water (ADT2MAW)

**IRTA Program:** Efficient Use of Water in Agriculture

**Location:** IRTA – Fruitcentre (Lleida)

**Responsible Researcher:** Dr Jaume Casadesús – [jaume.casadesus@irta.cat](mailto:jaume.casadesus@irta.cat)

**Description of the project:**

Achieving a more productive use of water in agriculture can be achieved by enabling technologies for irrigation DSS include IoT sensors, remote sensing, and crop modelling, which can nowadays be integrated in the emerging paradigm of Digital Twins (DT). IRTA has in operation two complementary implementations of DTs: IrriDesk ([www.irridesk.com](http://www.irridesk.com)) is addressed to smart autonomous control of irrigation at farm scale, while IrriLands ([www.irrilleida.cat](http://www.irrilleida.cat)) is addressed to the supervision of agricultural water use at regional scale. Ongoing research activities are dealing with different aspects of these DTs, from refinements in the underlying models to assessing their performance in real application. The postdoctoral researcher will contribute from the domains of agronomy, ecophysiology or data science to the scientific/technical background of DTs applied to manage agricultural water.

## 7. Life Cycle Assessment as a decision support tool to improve the environmental footprint of food production.

**IRTA Program:** Sustainability in Biosystems

**Location:** IRTA – Torre Marimon (Barcelona)

**Responsible Researcher:** Dr Ralph Rosenbaum – [ralph.rosenbaum@irta.cat](mailto:ralph.rosenbaum@irta.cat)

**Description of the project:**

The agricultural sector needs to rapidly transform to meet social expectations and legislative obligations in relation to sustainability, while preserving economic viability. The environmental footprint of animal-based food products can be decreased by improving animal feed, manure management and digestion emissions. For plant-based products, such efforts need to focus on fertilisation, irrigation, agroecological practices and circularity. Life Cycle Assessment will be the basis to evaluate alternative production scenarios involving, but not limited to, the use of new sources of protein and feed ingredients, organic fertilizers and other bioproducts, valorisation of biomass from other systems and the implementation of regenerative agriculture. The postdoctoral researcher will aim to develop a research project that will support decisions to be taken by farmers and companies as well as the development of effective policies supporting said transition.

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**How to apply? Follow these two steps:**

- 1) Contact via e-mail the researcher responsible for the topic of your interest from the list above including your CV and a motivation letter. The researcher will evaluate the candidates interested and will invite a candidate to submit a research proposal to the Scientific Committee of IRTA. The best 7 proposals among the different topics will be granted a postdoctoral position.
- 2) Register to [IRTA's Job Centre](#) – Job Post reference: 135-23

**Deadline for submitting your interest to the Responsible Researcher:** 3<sup>rd</sup> of December 2023

**Deadline for submitting to the Scientific Committee and the Job Centre:** 3<sup>rd</sup> of December 2023

**Terms of employment:**

Full-time position for 3 years with an annual gross salary of 33,247€ (category F of IRTA's salary scale). IRTA offers a rich environment for knowledge development and exchange where to develop a scientific career, and possibilities for professional promotion according to the attained achievements. More information can be found [here](#).

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