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AYUDAS RAMÓN Y CAJAL – CONVOCATORIA 2024

Turno RYC-INIA-CCAA

Área Temática: **Ciencias agrarias y agroalimentarias**
Nombre: HERRANZ JUSDADO, JUAN GERMAN
Referencia: RYC2024-051216-I
Correo Electrónico: german.jusdado@gmail.com

Título: Aquaculture and fish immunology

Resumen de la Memoria:

After finishing my biology studies, I embarked on my scientific career focusing on fish toxicology, using various fish models to understand environmental impacts. In 2015, I was granted a Marie Curie PhD scholarship under the ITN program IMPRESS, enabling me to pursue my doctoral training at the Universidad Politècnica de Valencia. Here, I dedicated four years to research on fish reproduction, primarily involving the European eel, aiming to standardize and enhance artificial maturation and sperm cryopreservation protocols. Following my PhD, I was awarded a postdoctoral grant Juan de la Cierva Formación to join the Fish Immunology and Pathology group led by Dr. Tafalla at the Animal Health Research Center in December 2020. There, I focused on study mucosal B cells in rainbow trout. Since January 2023, I have been a researcher in the Fish Health Group at Skretting AI in Norway. Here, I have been PI of different projects that integrate immunological research with practical applications in aquaculture. I have led biotechnology projects involving the development of in vitro studies using cell lines and primary cells to screen raw materials and additives. A major focus has also been to develop functional diets for salmonids and Mediterranean species. Currently, I also serve as an associate professor at the University of Stavanger, in the Faculty of Science and Technology. I have been a guest speaker in courses at University of Stavanger and the University of Valencia.

If awarded the Ramón y Cajal 2024 contract, my research will focus on several interconnected areas. A pivotal milestone in my career was the discovery of the bursa in rainbow trout, a potential immune organ whose role warrants deeper exploration. Confirming its significance in fish immunity could open new opportunities for innovative immunization and therapeutic strategies, such as direct vaccine or treatment applications targeting this organ. Furthermore, I aim to investigate whether this organ is conserved across the fish phylogeny, focusing on species of aquaculture interest like sea bass, sea bream, European eel, and seriola. My experience in the aquaculture industry and direct engagement with fish farmers have provided me with valuable insights into the challenges faced by modern aquaculture, particularly those related to fish health. One critical concern is the impact of rising temperatures on fish immune competence and infection dynamics□a problem exacerbated by climate change. Disease outbreaks, such as proliferative kidney disease (PKD) in rainbow trout across Europe or Lactococcus infections in warm-water marine species in Italy, are increasingly linked to unusually high temperatures. Additionally, complex gill diseases caused by algal blooms, jellyfish, and bacterial pathogens are on the rise in global salmon farming. These examples highlight how elevated water temperatures compromise immune systems and amplify pathogen virulence. To address this, my research will examine how temperature affects fish immune integrity, including changes in the microbiome and leukocyte composition of immune organs. I will also investigate temperature-driven shifts in pathogen virulence and fish immune responses. These studies will provide critical insights for the aquaculture industry, contributing to enhanced fish health and sustainable practices.

Resumen del Currículum Vitae:

I am a researcher specializing in fish health, immunology, and aquaculture, with experience in both academic and industry environments. After completing my biology studies, I began researching fish toxicology to understand the environmental impacts on aquatic organisms. In 2015, I received a prestigious Marie Curie PhD scholarship under the ITN IMPRESS program to conduct doctoral research at the Universidad Politècnica de Valencia. My work focused on improving artificial maturation and sperm cryopreservation protocols for European eels, achieving milestones such as enhanced hormonal treatments and the production of high-quality thawed sperm from cryopreserved samples□breakthroughs with direct applications in aquaculture.

After completing my PhD, I was awarded a Juan de la Cierva Formación postdoctoral grant to join the Fish Immunology and Pathology group at CISA-INIA-CSIC. During this time, my research focused on the immunology of rainbow trout, with groundbreaking findings on mucosal B cells. We identified and characterized IgD+IgM- B cells in gills and skin, demonstrating their distinct functional profiles compared to IgM+IgD- B cells in the same tissues. Using in vivo bacterial infection models with Yersinia ruckeri, we showed that mucosal B cell responses are rapid, localized, and pathogen-specific, significantly advancing the understanding of mucosal immunity in fish.

Additionally, we investigated red mark syndrome (RMS) in collaboration with the Technical University of Denmark. Our work revealed that IgM+ B cells are critical in RMS, particularly in lesion areas, where they differentiate into plasma-like cells. These findings provided valuable insights into the immune mechanisms underlying this disease. We also identified key differentiation markers for B cells, such as CD38 and CCR7, which could aid in studying plasma cell roles and immune responses in fish. One of the most notable discoveries during this period was identifying the bursa in rainbow trout, an immune organ previously documented only in Atlantic salmon. This finding opens new avenues for studying the evolution and function of immune tissues in fish.

In January 2023, I joined Skretting AI in Norway as a researcher in the Fish Health Group. I have led projects integrating immunological research with aquaculture applications, including developing in vitro models to screen raw materials and additives and designing functional diets for salmonids and Mediterranean species. These diets, tested in challenge trials against pathogens such as Yersinia ruckeri and Moritella viscosa, have advanced aquaculture nutrition, with one product set for commercial release. I have also fostered collaborations with Spanish research centers, establishing long-term partnerships to drive innovation in fish health.

Currently, I serve as an associate professor at the University of Stavanger, where I teach and mentor students in fish health and aquaculture. I have supervised master□s students from the Polytechnic University of Madrid and UiS, aligning their research with industry needs.

To date, I have published 24 scientific articles, 23 in Q1 journals, with 9 as the first author and 1 as the last author, earning an h-index of 12. My career reflects a dedication to advancing fish health research and providing sustainable solutions for aquaculture challenges.

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Área Temática: **Ciencias agrarias y agroalimentarias**

Nombre: VALERO CUESTA, YULEMA

Referencia: RYC2024-048341-I

Correo Electrónico: yulemaval84@gmail.com

Título: Integrated development of non-invasive tools for the prevention of virus vertical transmission in aquaculture fish

Resumen de la Memoria:

As an Agronomist Engineer specialized in animal production, I focused on health of animals for human consumption. During all my career, I significantly contributed to idea generation, hypothesis development, analysis, results discussion, and publication process of the following research lines:

1. NNV infection dynamics in fish gonads: I have led pioneering studies on RGNNV infections in fish gonads, contributing 21 publications (2 as corresponding-, 18 as first-, 2 as second-, and 1 as third-author) clarifying viral colonization in the gonads and latent infections mechanisms for potential vertical transmission of the virus. My research has detemined how immune-endocrine interactions or sex in naïve fish affect local and systemic immune responses after infection, especially regarding antimicrobial peptides (AMPs). These findings support sustainable aquaculture by improving disease resilience and addressing key challenges in line with global sustainability goals.

2. Development of antiviral strategies with synthetic antimicrobial (AMP)-derived peptides: Leading an international project and contributing to 2 articles and 1 review in high impact journals (IF 10.103, 4.581 and 10.592) and 1 book chapter (3 first-, 1 third-author), I tested synthetic peptides derived from fish AMPs. This research demonstrated the peptides' broad antiviral effectiveness across various fish species, introducing innovative, sustainable solutions for viral disease management in aquaculture with direct industrial applications.

3. Vaccine development against NNV: I developed vaccines targeting different NNV strains in fish, resulting in 5 first- and 1 last-author publications (3 as corresponding). Her research includes broodstock vaccination studies that revealed trained innate immunity inheritance in offspring, highlighting a novel approach to improve aquaculture health and sustainability. Further, it was determined that adenoviral vectors can infect fish brain cell lines setting the basis for further fish vaccine methods.

For this, I acquired specialised training at prestigious national and international centres, securing ~362,000 from highly competitive grant calls (success rate 10-25%), including the Juan de la Cierva Training and Incorporation programmes and DI Postdoctorado projects at PUCV (Chile). My career has been defined by a strong collaborative approach and significant mobility. This enabled me to establish and lead enduring national and international partnerships with highly specialised, renowned laboratories in their fields for advancing my current research line: the integrated development of non-invasive antiviral systems to prevent vertical virus transmission in aquaculture, for which preliminary results are promising. The research output associated with this career path includes contributions from researchers at various institutions, including PUCV and NBC (Chile), Universities of Palermo, Messina and Tuscia (Italy), CIIMAR (Portugal), Ningbo University (China), Norwegian Veterinary Institute (Norway), Dr. Yaira Fares University (Algeria), the Icahn School of Medicine at Mount Sinai (USA), the National Research Centre of Niza (Egypt).

Resumen del Currículum Vitae:

I am Agricultural Technical Engineer (2007) and Agronomist Engineer (2010) by the UCLM, where I started my research experience as internal student in the Department of Agroforestry Science and Technology and Genetics gaining experience in nucleic acids purification and molecular biology techniques. In 2011, with a JAE-TEC2010, I joined the Institute for Sustainable Agriculture (CSIC), where I learned laboratory and research management. From 2012-2016 with a FPI in the IEO, I conducted my PhD Thesis at the Marine Aquaculture Facility of IEO in tight collaboration with the Immunobiology for Aquaculture Group at the University of Murcia (I4A-UMU) specialising in immune-endocrine interactions, viral entry and replication into fish gonadal tissue and its immune response using nodavirus as model. During that time, I stayed at the Marine Immunobiology Laboratory at UNIPA (Italy), specialising in the isolation and characterisation of gonadal AMPs. In 2016, I joined the Immunological Markers Labrotaroty (PUCV, Chile) with a Banco Santander Mobility grant to synthetise polyclonal antibodies for fish proteins for immune characterization purposes. There, I led a DI Postdoctorado project focusing on designing synthetic peptides with antiviral properties and managed their Cell Culture Module. As postdoctoral researcher at I4A-UMU (2019), I further gained expertise in cytotoxic cell characterisation, applying tools generated from international stays. Also in 2019, I joined the Aquaculture Pathology Group (USC), specialising on virus-host interactions and fish virus life cycles. This knowledge has converged in my current project under the Juan de la Cierva Incorporation contract at I4A-UMU, about the development of tools to prevent viral vertical transmission in fish key challenge for the aquaculture sector on a global scale with a robust national and international collaboration network supporting cutting-edge research. This work has resulted in 30 publications in high-impact journals, including Antiviral Research (IF 10.103), Reviews in Aquaculture (IF 10.458), International Journal of Molecular Sciences (IF 4.900, Q1), or Fish & Shellfish Immunology (IF 4.100, D1) amongst others, with ~50% in D1 journals (76% in Q1). My participation in projects is resumed as 2 as principal investigator (1 national and 1 international), 4 as research team (2 regional, 2 national), 8 as work team (6 national and 2 regional). I am first author on 81% of the publications, corresponding on 16%, and last author on 3%. With a strong commitment with open science, I coordinated and spoke at events and participated in over 60 conferences mostly international ~40 fully available in CSIC repository including 2 invited oral presentations. My PhD Thesis and career were awarded in 2017 with the PhD Thesis Extraordinary Award and the International Mention by UCLM, and in 2024 my work recognized by an Animals Travel Grant. This trajectory was recognised through my inclusion on the editorial boards of 3 prestigious journals, guest editor for 2 special issues, and review of over 60 articles in indexed journals. I participated in PhD thesis evaluation panels, research staff recruitment processes, and sxpert for project evaluation for AVAP and EQA. Also, I have over 400 teaching hours, supervised 5 undergraduate and 2 master's theses, and currently mentor 2 PhD students.

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Área Temática: **Ciencias agrarias y agroalimentarias**

Nombre: PÉREZ IZQUIERDO, LETICIA

Referencia: RYC2024-051135-I

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Título: Role of ectomycorrhizal fungi in forest dynamics in a context of global change

Resumen de la Memoria:

My research line articulates around the plant-soil system, initially focused on the study of the interplay between fungal communities and their environment and their responses to disturbances. I have broadened this framework to other compartments of the soil system. An important achievement of my research career is related to understanding the role of the host tree genotype in soil functioning and microbial communities. Another important area of my research is focused on forest fires, both in Mediterranean and boreal forests. I have continued broadening my line of research to soil biodiversity including a wide range of soil organisms under natural and anthropogenic disturbances. I have also developed molecular tools to describe fungal diversity and to quantify tree root biomass in natural environments. Through a collaboration with the Swedish Environmental Protection Agency, I have developed protocols for soil DNA sampling of different groups of soil organisms to be implemented by the Swedish Forest Soil Inventory. My entire research career, first during my PhD and then as a postdoc, has been mainly developed in international groups and characterized by high mobility. The European Forestry Institute (EFI) in its Forest Strategy 2022-2025 has raised the necessity for strategies that strengthen the resilience of forests to climate change and declared as urgent to understand and mitigate the impacts that disturbances have on the multifunctionality of forests. Through the extensive experience that I have developed studying soil fungal communities, particularly those that form ectomycorrhizae, in multiple aspects and with different methodologies at the ecosystem level and on their responses to different disturbances, I propose to continue with a research line in which the central axis is ectomycorrhizal symbiosis and its key role in the dynamics of ecosystems after both anthropogenic and natural disturbances. This will be possible thanks to the national and international collaborations already established with researchers from different disciplines, ranging from soil microbial and faunal ecology to plant ecology and physiology and forestry, as well as my previous experience in coordinating activities within multidisciplinary international teams. My research program: 'Role of ectomycorrhizal fungi in forest dynamics in a context of global change' raises different potential lines of multidisciplinary research. Forest wildfires: I will study the impacts that forest fires, their severity, size and frequency, have on the abundance and composition of edaphic communities and on forest structure and productivity, their long-term effects and to know the consequences they may have for the recolonization of soil organisms and plant regeneration in Mediterranean forest. Forest management and drought: this line of research aims to investigate plant-ectomycorrhizosphere relationships and their response to drought in interaction with forest management, investigating both the physiological responses of plants and their relationship with the ectomycorrhizosphere. Soil biota and molecular tools: through my extensive network with experts in the fauna research area, I propose to carry out a calibration of DNA molecular techniques with actual data of soil animals in situ and optimize and develop new protocols by redesigning primers to study these communities.

Resumen del Currículum Vitae:

My research profile has resulted in a multidisciplinary line where disturbances and plant-edaphic biota interactions are integrated at the ecosystem level. My academic background is Agronomy. I started my research career with a Collaboration Fellow at the Agricultural School-University of Extremadura. I continued with a research fellowship of one-yr funded by Santander bank at the Forestry School of Plasencia (2011-2012) and then with a FPI that allowed me to get my PhD in March 2017 at the Institute of Agricultural Sciences (ICA)-(CSIC) (Spain) in collaboration with the INRA-Nancy (France), where I performed 5 research stays (total 13.5 months). My PhD focused in the study of fungal communities in Mediterranean forests. Right after, I got a two-yr postdoc fellowship at the Swedish University of Agricultural Sciences (SLU) (2017-2019) to continue my research on fungal communities in Boreal forests. I continued at SLU with a new researcher contract of 2-yrs where I tightly worked with the Swedish Environmental Protection Agency (EPA) and different stakeholders, with the aim to develop and standardized protocols for molecular analysis of microbial and fauna communities and to sample soil within the Swedish Soil Forest Inventory. I have also developed two molecular tools to investigate fungal diversity and quantification of root biomass. In 2021, I was awarded by the Postdoc research grant, Juan de la Cierva-incorporación and I am currently working in the EU H2020 project HoliSoil (Holistic management practices, modelling and monitoring for European forest soils) at BC3 in Bilbao. Since my PhD, I have performed other research stays (e.g., INRAE, CIDE, INIA and Oslo University). I have participated in 9 research projects. I have published 17 SCI articles in peer-reviewed journals (13 published and 4 under revision) (10 as a first author), 3 pre-prints, 4 scientific reports, several articles for popular science, 2 book chapters and I am currently preparing 2 articles for publication as first author and some co-authorly. Some of these papers have been published in some of the most influential journals in Ecology, Microbiology and Soil and Plant Science, such as Global Change Biology, Molecular Ecology, Journal of Ecology, Plant and Soil or Environmental Microbiology. I have amply developed skills to transmit results at national (6) and international (15) meetings, workshops (5) and as invited speaker in 5 seminars, as well as to communicate popular science (e.g., 4 editions of The week of Science in Madrid, International Day of Women and Girls in Science 2023 or The New York Times). I have supervised 6 international MSc, 4 research interns and I have been involved in teaching and organization activities within The soil Biology Course and a PhD course at SLU (Sweden). I have acted as reviewer of several international high-ranked impact journals such as New Phytologist, Global Change Biology or Soil Biology and Biochemistry and I have been an external international reviewer of one PhD thesis. I have demonstrated independent thinking and leadership abilities, especially during my postdoc period by leading 3 different projects which involved a high number of researchers with different expertise. Also, I have demonstrated abilities to perform interdisciplinary research as well as flexibility to work in national and international groups.

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Turno RYC-INIA-CCAA

Área Temática: **Ciencias agrarias y agroalimentarias**

Nombre: GODEFROID , MARTIN

Referencia: RYC2024-049642-I

Correo Electrónico: martin.godefroid@gmail.com

Título: Researcher in Integrated Pest Management

Resumen de la Memoria:

My research focuses on understanding pests' responses to environmental, biotic, landscape, and agricultural factors, for developing integrated pest management (IPM) strategies. To this end, I develop integrative approaches combining field surveys, mathematical modelling, landscape and spatial ecology, and molecular tools. During my career, I have made significant contributions to the development of IPM strategies for the control of some of the most important threats to worldwide agriculture and forests (e.g., the plant pathogens Xylella fastidiosa and Candidatus liberibacter, tropical plant-feeding nematodes and quarantine harmful insects such as fruit flies and bark beetles). My career began with my Master's thesis (2008-2009), where I designed biological control methods for a forest pest. Afterwards, I spent two years in the French Caribbean (2010-2012) studying how soil, climate, and agriculture affect plant-feeding nematode communities in tropical agrosystems. My PhD (2012-2015) focused on improving invasion risk assessments for quarantine insects in Europe, by calibrating ecological niche models informed by phylogenetic and phylogeographic information. Since the completion of my PhD, I have been awarded with 4 international prestigious grants and I have occupied four postdoctoral positions in different countries. I then undertook nine years of postdoctoral research in France, Canada, and Spain. During my first postdoc in France (2016-2017), I studied the epidemiology of the plant pathogen X. fastidiosa, combining fieldwork, genetic sequencing, and species distribution models. In 2017, I got the grant Juan de la Cierva (formacion), which I get up to enjoy a second postdoc in Canada (2018-2019) on environmental drivers shaping marine fish food webs. This Canadian experience allowed me to learn about cutting-edge ecological modelling methods. I then obtained the Spanish four-year Atracción de Talento grant (Modalidad 2) at CSIC, to continue my research on development of IPM strategies. Since 2023, and thanks to the prestigious Atracción de Talento program (Modalidad 1), I lead a funded research project (196,023) to tackle trophic interactions in Mediterranean agrosystems to develop IPM strategies. This opportunity allowed me to create my own research team composed by one postdoctoral researcher and undergraduate students. Thanks to these esperiences, I have played an active role in four Spanish and four international research projects (e.g., France ANRS, Horizon 2020). I have developed a solid international network of collaborators with more than 78 co-authors coming from all parts of the world. I have also been actively involved in promoting and disseminating research in outreach events and international conferences, as well as teaching at university and workshops and supervising students. Recently, I obtained the Certificate R3, which acknowledges the quality and potential of my research, the international scope of my scientific network, as well as my leadership and independence in the field.

Resumen del Currículum Vitae:

With 24 peer-reviewed articles (and several papers in preparation), I have published articles in top-tier journals: e.g., Soil biology and Biochemistry (ranked #1/34 in Soil Science), Ecography (ranked #4/54 in Biodiversity Conservation), Journal of Pest Science (ranked #5/100 in Entomology), Molecular Ecology (ranked #10/160 in Ecology), Diversity and Distributions (ranked #7/54 in Biodiversity Conservation), Progress in Oceanography (ranked #3/67 in Oceanography). Please find below a summary of the key points of my CV.

Indicators of science production and dissemination (Q1=Quartile 1; D1=Decile 1)

-Total number of publications in peer-reviewed journals: 24; D1: 5 (21%); Q1: 17 (71%); First author: 14 (58%); corresponding author: 13 (54%)
-Total number of citations: 763 (Google Scholar)
-H index = 16 (Google Scholar)
-Presentations in seminars, national and international conferences: 14 as first author; 4 invited talks in seminars and workshops
-3 publications in outreach journals

Editorial work, awards, and fellowships

-Certificate R3
-Permanent Associate Editor of the journal Ecological Entomology.
-Acreditación Ayudante doctor ANECA
-Four competitive postdoctoral fellowships: 2017: Juan de la Cierva (formacion); 2018: Visiting Fellowships in Canadian Government Laboratories; 2019: Atracción de Talento de la Comunidad de Madrid (Modalidad 2); 2023: Atracción de Talento de la Comunidad de Madrid (Modalidad 1)

Teaching and students/early scientists supervision

-Coordinator and principal teacher in the course Biodiversity, Land & Water, Master Sustainable Development and Global Governance (MASUS) University Carlos III of Madrid; (21h/year - 3 ECTS). Since 2022.
-Invited teacher at the 1st CURE-XF Regional Training in Xylella fastidiosa diagnosis, control, and management measures, 1-4 July 2019, Beirut, Lebanon.
-Invited teacher at the e-learning course Xylella fastidiosa: detection, epidemiology and control measure following an invitation from the CURE-XF European project.
-Postdoctoral advisor: Dr. Miguel González Ximenez de Embún (since 2024)

-Master thesis advisor: Ximena Rejon de la Parra (main advisor in 2023-2024, MASUS; University Carlos III of Madrid), Joséphine Queffelec (co-supervisor; University of Montpellier II, France); Agathe Allibert (co-supervisor in 2013; University of Montpellier II)
-participation to various outreach events

Knowledge transfer

-2022-2026: Appointed member of the French Agency for Food, Environmental, and Occupational Health & Safety (ANSES) in the expert panel on "Biological Risks for Plant Health". This panel mainly aims to assess the risks posed by emerging pests, and transfer this knowledge to decision-makers though elaboration of technical reports.
-2023-2025: Appointed Member in the ANSES five-scientist working group categorization of risk of invasion by 8 exotic forest insects. So far, four technical reports have been published on the ANSES website and transferred to decision-makers
-2023-2024: Appointed Member in the ANSES five-scientist working group pest risk assessment for both fruit flies Bactrocera dorsalis & Bactrocera zonata in France.

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Área Temática: **Ciencias agrarias y agroalimentarias**

Nombre: PÉREZ VALERA, EDUARDO

Referencia: RYC2024-049239-I

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Título: Soil microbiomes: Diversity and function in response to vectors of global change

Resumen de la Memoria:

My research focuses on the abiotic and biotic factors that shape the extremely diverse soil microbiomes and their relationship with microbial-driven ecosystem functions under scenarios of global change. I have worked both in natural and managed ecosystems, evaluating how environmental disturbance alters microbial diversity and community structure, as well as soil functions related to nutrient cycling. During my PhD, my research focused on the effects of fire on natural Mediterranean ecosystems, addressing the resistance and resilience to fire of soil microbial communities and functions. During my first postdoc abroad, I shifted to managed ecosystems, investigating how landspreading organic materials affects soil properties and microbial communities. Recently, in my second postdoc abroad, I have joined a research group specialized in the diversity and function of nitrogen-cycling microorganisms. Key findings include: 1) Fire alters soil properties, microbial communities, and functions that are resilient in ca. two decades after fire; 2) Manure amendments temporarily increase antibiotic-resistant bacteria and resistance genes, but native communities limit long-term colonization; 3) Plant NO homeostasis shifts shape microbiome composition.

I have extensive international research experience, with a four-month predoctoral stay at Vrije Universiteit Brussel (Belgium, 2014). In 2018, I joined the Biology Centre of the Czech Academy of Sciences for postdoctoral research on antibiotic resistance and microbial responses to disturbances. Since 2023, I have been at INRAE (France), working on nitrogen-cycling microorganisms, actively participating in three international (and two national) projects. I had a one-month stay in the University of Copenhagen.

As Principal Investigator, I led a Czech Science Foundation project (315k, 2020–23) to establish my research group. I coordinated the project, supervised 3 postdocs, 1 student, and 2 technicians, and initiated novel research lines, including community coalescence frameworks, droplet-based analytical techniques (ddPCR) for antibiotic resistance and metagenomics. I supervised researchers whose work resulted in publications, including Dr. P. Sardar (now at Cambridge). In 2022, I became head of the Microbial Adaptations Group, leading research. I also supervised MSc and PhD projects and collaborated with groups in Spain and across Europe.

Based on my previous research and experience, including both field and laboratory experiments, assessing diversity in microbial communities, the use of novel analytical and bioinformatic tools, the existing gaps in knowledge and mitigation strategies in soil functioning, I propose to 1) study the mechanisms involved in community resistance and resilience to fire, focusing in functional traits and 2) to develop, evaluate and eventually apply strategies for soil protection and restoration through the use of exogenous organic matter. I propose to do this using all fire chronosequences, prescribed or experimental fires and laboratory microcosms that allow specific conditions to be tested, including the relevance of microbial traits under increasing fire recurrence, and potential risks associated with the spread of potentially risky microorganisms and resistance to antibiotics.

Resumen del Currículum Vitae:

My research focuses on the diverse soil microbiomes and microbial-driven ecosystem functions under scenarios of global change, integrating theoretical models, empirical studies, and computational tools to predict how soil microorganisms and functions respond to environmental perturbations. I hold a MSc in Agricultural Biology (University of Granada, 2012) and a PhD with Summa Cum Laude and International Doctor Mention (University of Valencia, 2018) carried at the Centro de Investigaciones sobre Desertificación (UV-UVEG-CSIC, Valencia).

My academic career spans two national and four international institutions for a total of 66 and 85 months, respectively. My international stays include a four-month predoctoral stay at the Vrije Universiteit Brussel (Belgium), 57 months of postdoctoral work at Biology Centre (Czechia), 24 months at L Institut national de recherche pour l'agriculture, l'alimentation et l'environnement (INRAE) in France and one-month stay at University of Copenhagen (Denmark).

I co-authored 13 peer-reviewed articles, serving as first author on 8 and corresponding author on 7, published mainly in Q1 journals. These works have received 308 citations (WoS; 429 on Scholar) with an H-index of 9. My contributions include i) advancing fire ecology with predictive models for resilience for soil microbial communities, ii) frameworks for community assembly and functioning including phylogenetic metrics and iii) microbial invasions, antibiotic resistance, and nitrogen cycling. I actively communicated findings at 14 international (+1 national) conferences (8 active participations, 3 oral communications and 5 posters) and through seminars. I have participated in 11 projects, 6 international coordinated by Czech (3), French and German funding agencies (1) or by the European commission (2).

As principal investigator, I obtained a 315,000 competitive project (funded by the Czech Science foundation, 2020-22) that allowed me to set up my own research group at Biology Centre and supervise 3 postdocs, 1 MSc student, and 2 technicians. In 2020, I also obtained a competitive postdoctoral two-year contract (50,000). During my career, I have obtained 3 mobility and 1 conference grants. In 2022, led the group of Microbial Adaptations group (Biology Centre, Czequia).

I have collaborated with private entities and participated in public outreach events in Czechia, including HOBBY and Maker Day (Ceske Budejovice) and science open days for high-school students.

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I am Review Editor for Frontiers in Microbiology (since 2020) and advisory board member for BOLETÍN (2025□27) published by the Royal Spanish Society of Natural History. I have reviewed 29 scientific articles in high-impact journals such as Nature Sustainability or ISME J, and a German research agency. I am committed to open science and upload data to public repositories such as NCBI, EBI, Dryad and GitHub.

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Área Temática: **Ciencias agrarias y agroalimentarias**
Nombre: FATSINI FERNANDEZ, ELVIRA
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Título: Fish broodsrock management, nutrition and gamete quality

Resumen de la Memoria:

My scientific career has been marked by a continuous multidisciplinary and international collaboration with research centres related to aquaculture. I completed my bachelor's in marine sciences at the University of Cádiz (Andalusia) and subsequently finished an MSc in Aquaculture at the Polytechnic University of Valencia. Later, I was awarded a predoctoral scholarship from INIA to pursue my PhD at the Institute of Agrifood Research and Technology (IRTA) (Catalonia). The objectives of the thesis were to evaluate Senegalese sole behaviour and chemical communication related to reproductive performance. After defending the thesis, I received my first postdoctoral fellowship at the University of Algarve (Portugal) in 2018, within the REPRO-F1 project, focusing on Senegalese sole domestication. The second postdoc was also at the University of Algarve in 2020, associated with the EBB project which aimed to develop cryopreservation protocols to preserve biological material. Throughout this pre and postdoctoral period, I have published 19 articles (6 as first author, 4 as last author, 15 in Q1 journals) in high-impact journals within the field of aquaculture. These publications have provided novel information for Senegalese sole domestication, particularly regarding behavioural aspects associated with spawning seasons, dominance in juveniles and breeders, and the importance of olfaction in this species. Recently, I published a review related to fish reproduction focus on methodologies (last and corresponding authorship). Another article, in which I am the last author, related to dominance behaviour using environmental enrichment, the first association of its kind made in this flatfish species. Currently, I have 5 articles submitted under revision related to turbot oocyte quality, environmental enrichment in sole, extracellular vesicles characterisation in seminal and blood plasma. I have one article in preparation associated with olfaction, environmental enrichment (first author) and transcriptomics. During my PhD, I undertook 2 national stays (IFAPA, Cádiz and ICM, Barcelona) and 4 international stays (University of Stirling, Scotland (8 months), and CCMAR, Portugal (3 months)), acquiring knowledge in molecular biology and chemical communication in fish. My entire postdoc period (6 years and 10 months) has been abroad (CCMAR, Portugal), during which I also had a 2-month stay at Nord University (Norway), through an STM-COST Action (EPRITRANS). I have participated in 18 projects, 3 national (MINECO, INIA) and 15 European (GERMROS, BREEDFLAT, AQUATECHINN-4.0, SPERMANTIOX, CONDISOLE, BESTBROOD, DIVERSIFY, BIVALIFE, REPRO-F1, SERINOVA, EBB, NANOREPROTOX, DATAQUEST, Bilateral action CCMAR-50) as part of the research team, of which I am the Principal Investigator for 3. Five are related to technology transfer, due to continuous contact with companies dedicated to flatfish production such as Stolt Sea Farm (Spain) (2 CDTIs), Sea8 (Portugal) (REPRO-F1), CUPIMAR (Spain) (BESTBROOD), and FLATLANTIC (Portugal); SOGN AQUA JUVENILES (Norway) (BREEDFLAT). This collaboration is related to the interest in the results and techniques developed in different projects to close the life cycle of Senegalese sole, turbot, and Atlantic halibut in captivity. Currently, I have been awarded a Beatriu de Pinós postdoctoral contract to be incorporated in April 2025 at IRTA-SCR

Resumen del Currículum Vitae:

Publications: 19 (6 first author; 4 last author)
Q1 Publications: 15
Under review submissions: 6 (4 first and corresponding author)
h-index: 10
Citations: 166 (Publons); 245 (Google Scholar).

Projects:
Role as Principal Investigator (IP): 3 (GERMROS, CONDISOLE, BR CCMAR-50).
Role in research team: 15: national: 3 (BEINGHAVIOR (MINECO), INIAs); international: 12 (BIOAQUA, AQUATECHINN 4.0, BREEDFLAT, SPERMANTIOX, BESTBROOD, NANOREPROTOX, REPRO-F1, SERINOVA, EBB, DIVERSIFY, DATAQUEST, BIVALIFE).

Internationalization: Total time abroad: 6 years and 11 months
National predoctoral stays: 2 (IFAPA, Cádiz; ICM, Barcelona)
International predoctoral stays: 4 (University of Stirling, Scotland (total of 8 months); CCMAR, Portugal (3 months)).
International postdoc fellowships: 2 (University of Algarve, Portugal (3 years).
Research contract: 1 (Centre of Marine Sciences (CCMAR), Faro, Portugal (2 years and 11 months)); 1 (Institute of Agrifood Research and Technology (IRTA), Sant Carles de la Ràpita, Spain (to be incorporated in April 2025))
International postdoc stays: 1 (Nord University, Norway (2 months) STM-Cost Action); 1 in preparation (INRAE, France (3 months) under AQUASERVE program).

Communications in national and international conferences:
Oral: 25
Posters: 24

Outreach communication:
Classes imparted to children and teenagers: 6
Courses imparted to children: 2
Social training: 2
Fairs: 2

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Training:
Supervised MSc theses: 3
Co-supervised MSc theses: 2
Supervised undergraduate theses: 3
Seminars held at research centres and universities: 9
Workshop in Reproductive Biotechnology organization and training: 3

Teaching:
Taught classes in "Animal and Plant Histology" at the University of Algarve for the Biology degree (24 hours) during the 2023/2024 and (60 hours) 2024/2025 academic year. Conducted masterclasses on fish behaviour for students of the Master's in Aquaculture and Fisheries at the University of Algarve (Faro) from 2018 to the present.

To sum up, I have attended 18 conferences, 3 national and 15 internationals, presenting a total of 25 oral communications and 24 posters disseminating my research progress to the scientific community. I gave 9 seminars for students and researchers at various centres (CCMAR, Nord University, IRTA), and I have supervised and co-supervised 3 BSc and 5 MSc theses. Additionally, I am part of the organizing committee of three workshops held at CCMAR associated with reproductive biotechnology in aquatic species. Currently, I am responsible for outreach communication within AQUAGROUP through various outreach activities, disseminating science to society. I am part of the editorial team of the journal 'Frontiers for Young Minds,' transferring science to children, where I have participated in reviewing 3 publications. Besides, I am on the editorial board of a Peruvian aquaculture journal (Peruvian Journal of Agricultural Research (REPIA)). I lead a dissemination group at CCMAR called 'OSMOSE,' which aims to convey science through art. To date, I have revised 34 article reviews for high-impact aquaculture journals. Moreover, I have taken part in 1 PhD and 3 master's theses Committee' and 9 scientific Committee' to evaluate various fellowship positions at the University of the Algarve and CCMAR.

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Área Temática: **Ciencias agrarias y agroalimentarias**

Nombre: TEJEDOR CALVO, EVA

Referencia: RYC2024-048960-I

Correo Electrónico: evatc95@gmail.com

Título: Valorization of agri-food residues by exploring their chemical, aromatic, and bioactive composition for potential use in the agri-food industry

Resumen de la Memoria:

Eva Tejedor is a food technologist from the University of Zaragoza, specializing in the Master's program in Novel Foods at the Autonomous University of Madrid. In 2018, she began working on a project at the Agri-food Technology Center of Aragón (CITA) while pursuing a PhD in Food Science at the Institute of Food Science (CSIC-CIAL) in Madrid. In 2022, she obtained her PhD with international mention and a summa cum laude distinction for her thesis. At CITA, she continued her postdoctoral work until she received the Juan de la Cierva fellowship in 2023 to work for two years at the Aroma and Oenology Analysis Laboratory (LAAE) at the University of Zaragoza.

Eva has published 26 scientific articles in high-impact, with over 65% of them as the first author. Her scientific productivity is significant (Scopus H=11; 274 cites) since she began her academic career in 2019. She has also participated in conferences national (9) and international (15), presenting oral communications (11) and posters (13). Eva leads a regional project (IER 2023) and a task in the European project INTACT (2022). Eva has given numerous talks and participated in technical and outreach, and initiatives related to Women and Girls in Science. She has also been interviewed by national and regional media outlets (radio, press, television, and YouTube). Eva's work has been recognized with the Talento y Tecnología award from the Madrid City Council in 2023 for her doctoral thesis, as well as an honorable mention at the Premios Tercer Milenio in 2024 for her career as a young scientist.

She is an expert in analyzing and extracting bioactive and aromatic compounds, using advanced techniques like supercritical fluids and pressurized liquids. She specializes in the development of health-beneficial fermented beverages like kombucha, utilizing various food matrices. Eva also models the aroma of food, particularly wine, predicting its scent based on chemical composition. Additionally, she is skilled in detecting food frauds, including in truffle products, using metabolomics to ensure authenticity and quality in culinary experiences and other techniques as PCR and DNA sequencing, classic microbiology and microscopy.

The research line Eva intends to focus on the sustainable use of agri-food by-products to obtain functional and aromatic ingredients using advanced extraction techniques, with subsequent applications in the food and pharmaceutical industries. The by-products under consideration include residues from the cultivation, harvesting, and processing of vegetables, stone fruits, cereals, mushrooms, and livestock, all of which are generated in Aragón. This work is aligned with European policies on sustainability, bioeconomy, and food security and is a strategic priority to enhance the competitiveness of Spanish agri-food sector. The primary objective of this research line is to valorize agri-food residues by exploring their chemical, aromatic, and bioactive composition for potential use in the agri-food industry. The project will contribute to the sustainability of the agri-food sector by reducing waste, improving resource efficiency, and creating health-promoting products. It will enhance local businesses' competitiveness, particularly those focused on sustainability and innovation, and create skilled jobs in research, development, and by-product valorization.

Resumen del Currículum Vitae:

Eva Tejedor is a food technologist from the University of Zaragoza, specializing in the Master's program in Novel Foods at the Autonomous University of Madrid. In 2018, she began working on a project at the Agri-food Technology Center of Aragón (CITA) while pursuing a PhD in Food Science at the Institute of Food Science (CSIC-CIAL) in Madrid. In 2022, she obtained her PhD with international mention and a summa cum laude distinction for her thesis titled "Design of innovative methodologies to obtain value-added extracts as aromatic enhancers and functional ingredients for the valorization of truffle." At CITA, she continued her postdoctoral work until she received the Juan de la Cierva fellowship in 2023 to work for two years at the Aroma and Oenology Analysis Laboratory (LAAE) at the University of Zaragoza.

Eva has published 26 scientific articles in high-impact journals such as Food Chemistry and Food Hydrocolloids, with over 65% of them as the first author. Her scientific productivity is significant (Scopus H=11; 274 cites) since she began her academic career in 2019. She has also participated in conferences national (9) and international (15), presenting oral communications (11) and posters (13). Eva leads a regional project (IER 2023) and a task in the European project INTACT (2022). Additionally, she has collaborated on various projects with companies (CDTI), as well as regional, national, and international teams. She also participates as a lecturer in the Master's program in Food Quality and Safety at the University of Zaragoza. Additionally, she has taken part in several Practical Truffle Cultivation courses at the Summer University of Teruel. Eva has given numerous talks and participated in technical and outreach events for the truffle sector, the general public, and initiatives related to Women and Girls in Science. She has also been interviewed by national and regional media outlets (radio, press, television, and YouTube). She also has been reviewer and editor of scientific journals belonging to Q1 and Q2. Besides, Eva played a key role in developing and implementing consumer training for the creation of the first black truffle tasting panel in the world in collaboration with ATRUTER between 2020 and 2022. This initiative has since contributed to events like truffle competitions and the sensory evaluation of the newly registered Protected Geographical Indication (PGI) Black Truffle of Teruel. Through her efforts, Eva has been instrumental in promoting the establishment of quality brands for truffles. Eva's work has been recognized with the Talento y Tecnología award from the Madrid City Council in 2023 for her doctoral thesis, as well as an honorable mention at the Premios Tercer Milenio in 2024 for her career as a young scientist.

Eva stands out for her extensive national and international experience. She received the EIT Food RIS Talent 2022 scholarship, which allowed her to spend five months at the AZTI Research Center in Bilbao (Spain). She also completed research stays at the University of Lund (Sweden) and the University of Hamburg (Germany) through the CAI Ibercaja Young Researchers in Aragón scholarships in 2021 and 2022 (for three months each).

Additionally, she has conducted several postdoctoral stays at CIEFAP and CONICET (Argentina) and the University of Perugia and Cagliari (Italy) for a total of 8 months in 2022 and 2023.