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## AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2014

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**Nombre:** BARROS, LILLIAN  
**Referencia:** RYC-2014-15174  
**Área Científica:** Ciencia y Tecnología de los Alimentos  
**Correo Electrónico:** lillian@ipb.pt

### Título:

Application of natural ingredients as conservation enhancers and health promoters in novel food formulations

### Resumen de la Memoria:

I was awarded with my first FCT post-doctoral grant in 2009. In 2011, I received the second FCT post-doctoral grant and the evaluators mentioned that the work accomplished in the first three years was extraordinary. My research has focused in the nutritional and chemical characterization of natural matrices from Northeast Portugal (plants and mushrooms). I have strongly contributed to the optimization, implementation and development of various analytical techniques for different molecules, bioactivity evaluation of the mentioned natural matrices, including antioxidant, antimicrobial, and antitumor activities. In July 2013, I received a substitute position, Ciência 2008 FCT contract.

In a short-term, my carrier objectives are to be principal investigator of a research project, being able to develop an independent research and continue to contribute in the supervision of PhD and Master Students. In a long-term, my carrier objectives are to lead my own research team, as also to internationalize at a higher level the research by applying to European projects and be able to achieve the following steps in my research career. Patents registration will also be a crucial objective that is feasible since my research has been carried out along with food companies, such as market leaders in herbal (F. Duarte, Elite and ADP Lisbon; Mais Ervas Alfândega da Fé), bakery (Pão Gimonde Bragança), chestnut (AgroAguiar VP Aguiar, Gamma-Pak Poland) and dairy (Casa Matias) products.

The different research lines in which I have worked can be summarized in:

1. Chemistry of Natural Products: Extraction, identification, fractionation and isolation of chemical compounds in natural matrices (mostly food matrices).

To determine the individual profile of compounds, such as: fatty acids, sugars, organic acids, vitamins, carotenoids, phenolic compounds in natural matrices, chromatographic and spectrometric techniques are applied.

2. Nutraceuticals and functional foods: development of nutraceuticals and innovative food formulations with functional properties.

This research line evaluates the antioxidant activity and antitumor properties using human tumor cell lines, and hepatotoxicity activity of natural matrices. Furthermore, the incorporation of natural extracts/fractions/compounds (free or protected) in food formulations are also evaluated.

3. Technology of Natural Products: Emergent technologies for conservation of food matrices (guaranteeing food quality, safety and security).

Application of different technologies for preservation such as, gamma and electron beam irradiation of food products and application of natural preserving ingredients.

The experience acquired along these years, mainly in the characterization and analysis of phenolic compounds and other phytochemicals present in wild plants and mushrooms will allow me to start an independent work in this research field. The research performed until now fits completely within the area of Food Science and Technology and my main research lines will increase my knowledge on the composition of natural food products, adding value to those products, and allowing the development of new food products by incorporation of natural ingredients. Other important objective is to contribute to a sustainable and competitive agri-food sector for a safe and healthy diet, which is within the Horizon 2020 program.

### Resumen del Currículum Vitae:

Lillian Barros (LB)

Orcid 0000-0002-9050-5189

ResearcherID J-3600-2013

Scopus AuthorID 35236343600

LB completed her PhD Doctor Europeus in Pharmacy (Nutrition and Bromatology) University of Salamanca in 2008, receiving an AWARD for the best thesis of Faculty of Pharmacy. LB was AWARDED with 2 Portuguese Foundation of Science and Technology (FCT) post-doc grants (Jan 2009-Dec 2011; Jan 2012-Jun 2013) in Mountain Research Center CIMO- Polytechnic Institute of Bragança (IPB), Research Group on Polyphenols-University of Salamanca and Center of Chemistry- University of Minho. LB received a short-period contract Ciência 2008 (substitution position) by the FCT to carry out research at CIMO. LB research outputs have been transferred to companies market leaders in herbal (F. Duarte, Elite and ADP Lisbon; Mais Ervas Alfândega da Fé), bakery (Pão Gimonde Bragança), chestnut (AgroAguiar VP Aguiar, Gamma-Pak Poland) and dairy (Casa Matias) products.

LB published 139 ISI WEB of KNOWLEDGE-INDEXED PAPERS, within the highest impact factor journals in Food Science and Technology area, 25 h-index with over 2142 citations, and is ranked as the 5th Portuguese researcher in the Citation Ranking of the Essential Science



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Indicators (Thomson Reuters Web of Science) in the field of Agricultural Sciences. LB is co-editor of a book to be published in WILEY-BLACKWELL and has written a book chapter for SPRINGER. LB was co-EDITOR in BioMed Research International (special issue) and is member of the EDITORIAL BOARD of International Scholarly Research Notices.

LB has been member of FINANCED RESEARCH PROJECTS with different typologies: 2 FCT I&D; strategic Project; 2 FCT Bilateral cooperation project (Serbia and Brazil); 6 Technology transference projects and a Scientific divulgation project. L. Barros has important AWARDS namely, Food Technology I&DT 2011, and Eureka 2012 (nº 7596) and 2014 (nº 9147). LB has been participating in Horizon 2020 projects 2014 applications, as also ERANet and Cyted networks.

LB has experience in the SUPERVISION of PhD (2), Master (4) and bachelor (3) students, as also 7 PhD student visitors in CIMO.

LB has performed INTERNATIONAL INTERNSHIPS: 1) CIMO-IPB, Portugal, during 2009-2014; 2) Faculty of Pharmacy, Univ. of Salamanca (USAL), Spain, 2 months each year 2009-2011; 3) Institute for Biological Research, Univ. of Belgrade, Serbia from 16/01/2012 to 19/07/2012; 4) Faculty of Pharmacy, Univ. Complutense of Madrid (UCM), 11/02/2013 to 16/05/2013; 4) Institute of Energy and Nuclear Research, Univ. of São Paulo, Brazil, 01/09/2014 to 02/12/2014. LB has also international collaborations with other Universities in Brazil (Estadual Paulista Univ.), Netherlands (Wageningen Univ.), Poland (Institute of Nuclear Chemistry and Technology), Ireland (Limerick Institute of Technology), Tunisia (Univ. of Monastir) and Argentina (Centro de Investigación y Extensión Florestal Andino Patagónico).

LB has been member of the organizing committee of scientific conferences, presented invited lectures in international conferences, and ~219 oral/poster communications, including papers in conference proceedings. LB has teaching experience in Chemistry of Natural Products, Biochemistry and Bioactivity of Natural Products.

L.B has reviewed more than 80 papers from 25 different International Peer Review Journals, and 4 PhD thesis **◆Doctor Europeus◆** from UCM and USAL.



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**Nombre:** GARDE CERDAN, TERESA  
**Referencia:** RYC-2014-14967  
**Área Científica:** Ciencia y Tecnología de los Alimentos  
**Correo Electrónico:** gardecerdan@hotmail.com

### Título:

Mejora de la calidad de la uva y del vino mediante el estudio de factores agronómicos, enológicos y tecnológicos

### Resumen de la Memoria:

Durante mi doctorado en la Universidad Pública de Navarra, bajo la dirección de la Dra. Carmen Ancín, estudié diferentes factores que pueden influir en la composición volátil de los vinos envejecidos en barricas de roble. En esta misma Universidad, desarrollé mis dos primeros años de etapa postdoctoral, centrados principalmente en el estudio de la aplicación enológica de la tecnología de pulsos eléctricos de alta intensidad (PEAI), con el fin fundamental de reducir el uso de anhídrido sulfuroso durante la vinificación y conservación de los vinos, en colaboración con el grupo de la Dra. Olga Martín-Belloso. Realicé una estancia de 4 meses en la Università degli Studi Della Basilicata (Italia), estudiando la influencia del origen de la levadura en la composición volátil de los vinos. En 2007, comencé a trabajar en la Universidad de Castilla-La Mancha con un contrato Juan de la Cierva (2007-2009), en el grupo dirigido por la Dra. M. Rosario Salinas. En esta etapa continué mis estudios sobre la composición volátil de los vinos de crianza y aplicamos la tecnología NIR como herramienta al alcance de las bodegas para predecir dicha composición. Además, inicié una línea de investigación sobre compuestos nitrogenados y su influencia en la composición volátil de los vinos. Codirigí una Tesis Doctoral en la que se desarrolló un innovador método analítico de determinación del potencial aromático de la uva. En 2009, estuve 4 meses de estancia en la Agricultural University of Athens (Grecia), completando mi formación en el estudio aromático de los vinos, y 6 meses en la Universidade Técnica de Lisboa (Portugal), ampliando el estudio de la aplicación de los PEAJ en vinificación. En 2010, me contrataron como doctora, vía proyecto nacional, para llevar a cabo el estudio sobre la aplicación foliar de extractos acuosos de roble en la viña, con el objetivo de dar a los vinos tipicidad aromática desde la cepa, línea en la que continué colaborando con la Dra. M. Rosario Salinas. A finales de 2010, me incorporé al Instituto de Ciencias de la Vid y del Vino con un contrato JAE-Doc y en 2011 inicié mi actual contrato Doc-INIA (2011-2016). En esta etapa, he continuado el estudio de la aplicación de PEAJ, ahora con el objetivo de favorecer la extracción de compuestos aromáticos, nitrogenados y fenólicos de los hollejos, para mejorar la calidad organoléptica de los vinos y sus propiedades saludables. Y mi línea central de mi investigación en la actualidad es la optimización de la aplicación foliar en la viña de compuestos nitrogenados y elicitores con el fin de mejorar la composición aromática, nitrogenada y fenólica de la uva y del vino. Estoy dirigiendo una Tesis Doctoral centrada en el estudio de la composición fenólica, área cuyo estudio estamos iniciando. Además, colaboro con otros grupos de investigación, tanto nacionales como internacionales, en diversos trabajos de investigación en viticultura y enología. En resumen, el objetivo fundamental de mi investigación es contribuir, con mi amplia experiencia en el estudio de la composición aromática y nitrogenada, y mis conocimientos iniciales en el estudio de la composición fenólica, a la mejora de la calidad y de las propiedades saludables de la uva y del vino mediante el estudio de factores agronómicos, enológicos y tecnológicos.

### Resumen del Currículum Vitae:

Licenciada en Ciencias Químicas por la Universidad de Zaragoza (1996). Doctora en Ciencias Químicas (2004) por la Universidad Pública de Navarra (UPNA) bajo la dirección de la Dra. Carmen Ancín. He disfrutado de 2 becas predoctorales del Gobierno de Navarra (1999-2004) y de 2 becas postdoctorales de la UPNA (2004-2006). El Ministerio de Educación y Ciencia me concedió un contrato **Juan de la Cierva** (2007-2009) con el grupo de la Dra. M. Rosario Salinas de la Universidad de Castilla-La Mancha (UCLM), y posteriormente continué trabajando mediante un contrato con cargo a proyecto. En 2010, me incorporé al Instituto de Ciencias de la Vid y del Vino (ICVV) con un contrato JAE-Doc (CSIC) y en 2011 comencé mi actual contrato de Doctor-INIA. Durante estos años he participado en 39 proyectos de investigación (4 europeos, 10 nacionales, siendo IP y coordinadora en 1 de ellos, 22 autonómicos, 20 son anuales, siendo IP en 5, y 3 de infraestructuras, IP en 1), y 3 proyectos con empresas; además, participo en 3 proyectos internacionales en fase de evaluación (IP en 1). He realizado 4 estancias en centros extranjeros durante 17 meses (Università degli Studi Della Basilicata, Italia; Agricultural University of Athens, Grecia; Universidade Técnica de Lisboa, Portugal; Instituto Nacional de Tecnología Agropecuaria, Argentina) y 2 estancias en centros nacionales (INIA e IVICAM). Mi investigación se ha centrado en el estudio de diferentes factores agronómicos, enológicos y tecnológicos que pueden afectar a la composición aromática, nitrogenada y fenólica de la uva y del vino, que determinan sus cualidades organolépticas y saludables.

Soy coautora de 46 artículos internacionales publicados en revistas de alto impacto-SCI y 4 en revistas no SCI (38 como 1ª ó 2ª autora y 5 como autora para correspondencia) y de primer orden en su área (34 artículos dentro del 1er cuartil y los otros 12 en el 2º cuartil), que han recibido 706 citas (h=18); 6 trabajos en revisión; 1 libro internacional (1ª autora); 9 capítulos en libros internacionales (1ª autora en 2 y autora para correspondencia en 4); 24 publicaciones en revistas divulgativas y 3 capítulos de libros nacionales. Asimismo, he contribuido en 54 trabajos presentados en congresos nacionales (20) e internacionales (34), 6 presentados como comunicación oral. En mi etapa en la UPNA codirigí 2 trabajos fin de carrera y formé a 3 personas en la realización de su tesis y a 1 en su DEA. Durante mi etapa en la UCLM colaboré en la docencia de varias asignaturas, en la formación de becarios y de 2 doctorandas y codirigí una Tesis Doctoral. Actualmente en



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el ICVV, he formado a varios becarios y 2 doctorandas y estoy dirigiendo una Tesis Doctoral (DEA ya defendido). He sido miembro de 5 Tribunales de Tesis Doctoral y suplente en 3. Tengo la acreditación para Profesor Ayudante Doctor (ANECA) y Contratado Doctor (ACUCM). Soy revisora para las más importantes revistas SCI del campo de Ciencia y Tecnología de Alimentos (158 censuras), y miembro de varias asociaciones científicas. Asimismo, he censurado un Proyecto Europeo y trabajos presentados a 2 Congresos Internacionales y soy Evaluadora Experta de la Comisión Europea. Mi trabajo durante estos años me ha permitido entrar en contacto con diversos grupos, tanto nacionales como internacionales, con los que estoy realizando trabajos de investigación y formación en la actualidad.



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**Nombre:** FABRA ROVIRA, MARIA JOSE  
**Referencia:** RYC-2014-15842  
**Área Científica:** Ciencia y Tecnología de los Alimentos  
**Correo Electrónico:** mjfabra@iata.csic.es

### Título:

Development of barrier and functional biodegradable nanostructured multilayer systems of interest in food packaging applications

### Resumen de la Memoria:

During both my pre-doctoral and various post-doctoral stays, I carried out extensive studies on several topics of application in Food and Food Packaging. During my PhD at the Polytechnic University of Valencia (UPV) and at the University of Bourgogne (France), I focused on the development of barrier and active edible films and coatings made of food hydrocolloids to enhance food quality and extend product shelf life. As a result, I was able to coin during these early research years extensive knowledge on the development, physical and chemical characterization of biopolymers and also on the evaluation of the effectiveness in the case of active edible films and coatings. As detailed in my CV, during my pre-doctoral stage, I was also involved in the characterization of physico-chemical properties of foods as a tool to improve product processing and stability.

As a post-doc, my research activity continued on the field of biopolymers derived from biomass resources but in this case to carry out work on the development of biodegradable nanocomposites and nanostructured multilayer systems of interest in food packaging applications. There is a growing trend, due to both environmental concerns and inherent properties, to substitute petroleum-derived plastics by renewable polymers. During my post-doc period, I dedicated significant efforts in studying starch and other biodegradable polymers to evaluate their film forming properties, in terms of both processing strategies and physicochemical characterization, for application in the food packaging area. In this topic, I supervised one PhD student. During this period, the encapsulation of aroma compounds in biodegradable matrices was also carried out at the University of Bourgogne. Since 2012, I have been working in my current research institute, The Institute of Agrochemistry and Food Technology of the Spanish CSIC (IATA-CSIC) on the development of innovative strategies to improve the barrier and functional performance of biodegradable and renewable polymers, leading a new research topic in my institute devoted to the development of fully biodegradable multilayer systems including interlayer bioadhesives processed by electrohydrodynamic atomization (EHDA) technology. This processing technology also allows the encapsulation of active and bioactive compounds of interest in active, smart and bioactive food packaging. In this interesting and unique research topic, I'm currently supervising two PhD students, who work on the development of antimicrobial nanoparticles derived composites and on temperature buffering biodegradable materials of interest in active and smart food packaging applications, respectively. In 2013, I carried out a postdoctoral stay at the University of Minho (Portugal) to develop another innovative multilayer technology (layer-by-layer) in the food packaging area. In this sense, by using this methodology, active biodegradable structures can be developed as a novel food coating technology in the food area. Both, the EHDA and the layer-by-layer are very new technologies scarcely used in the food area and which have potential applications to develop barrier and active fully renewable and biodegradable nanostructured multilayer systems of great interest in food packaging applications.

### Resumen del Currículum Vitae:

Doctorate in Food Science and Technology at the Polytechnic University of Valencia (UPV) (European mention of PhD) in the Department of Food Science and Technology (extraordinary award; 2010) related to edible films and coatings based on sodium caseinate. During this period, I did a pre-doctoral stay at the University of Bourgogne (France). Thereafter, in 2010, I was granted with a postdoctoral contract at the UPV as a postdoctoral scientist. For almost two years, I was working on the development of edible films based on biodegradable materials and I was a supervisor of one PhD student working on the development of biodegradable composite films based on starch. During this period, I did a postdoctoral stay at the University of Bourgogne working on the kinetics release of aroma compounds encapsulated into biodegradable films. In 2011, I was granted with a postdoctoral contract Juan de la Cierva at the Institute of Agrochemistry and Food Technology of the Spanish CSIC where I am working on the development of innovative strategies to improve the barrier and functional performance of biodegradable and renewable polymers, leading a new research topic in my institute devoted to the development of fully biodegradable multilayer systems including interlayer bioadhesives processed by electrohydrodynamic atomization (EHDA) technology. In 2013, I carried out a postdoctoral stay at the University of Minho (Portugal) to develop layer-by-layer active biodegradable structures which is a novel food coating technology in the food area.

Throughout my scientific career, I have developed a multidisciplinary cutting-edge background which spans from characterization of foods to the development of highly functional biopolymers by means of nanotechnology using a broad range of analytical techniques. My research activities have resulted in 42 peer-reviewed papers (all belonging to SCI journals, 38 indexed in the first quartile and 4 in the second quartile). I am first author in 21 of them and corresponding author in 14. Moreover, I am a co-author of 13 book chapters and co-editor of a book. I have been co-author of 45 communications in scientific congresses. I am guest associate chief editor of a special issue on Bio-Based Packaging (to be published in brief in the Journal of Applied Polymer Science) and, recently, I was part of the organizing



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committee of two international congresses. Furthermore, I am one of the Spanish Delegates and member of the Management Committee in the Cost Action MP1206. In addition, I am co-inventor of one patent and of 3 patents applications which are currently being filed by my institution. My h-index is 16. I have participated in 2 EU funded projects, in 9 national funded projects and in 3 projects funded by industry. In the field of teaching, I supervised one PhD and two more on execution, five master thesis, one international master thesis and nine final degree projects. I also participated in a teaching innovative project at UPV and I have been co-author of 4 communications in international congresses oriented to teaching training. I got a positive evaluation of the ANECA for the figures of **ayudante doctor**, **contratado doctor** and **profesor de Universidad privada**. Currently, I am collaborator as a reviewer in SCI journals like Biomacromolecules, Food Hydrocolloids, Carbohydrate Polymers and Journal of Food Engineering.



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**Nombre:** CARMONA DELGADO, MANUEL  
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**Área Científica:** Ciencia y Tecnología de los Alimentos  
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### Título:

Food Integrity: providing assurance about the quality, safety, and authenticity of food and its healthy effect

### Resumen de la Memoria:

Throughout my career, I have addressed several aspects included into the concept **Food Integrity**, such as food quality, safety, and authenticity, and its potential healthy effect too. I have worked with different food matrices: saffron spice, wine and grapes, dairy products, fish and raw vegetables. I have also worked with aromatic plants, wine industry by-products and floral bio-waste. Not being food products themselves, they were studied for fortifying food products to improve its quality, or transform them into functional food.

**Quality:** I have developed many non-targeted (UV-Vis, FT-IR, FT-NIR and FT-Raman) or targeted (GC-MS, HPLC-DAD or LC-ESI-MS) quality control methodologies for the main saffron compounds. I developed also a headspace technique for cheese aroma and a new index for grape quality control called IPAV (Varietal Aroma Potential Index) which is commercially available as a kit.

I improved the industrial processing of saffron to achieve the best quality or new products: optimizing the dehydration conditions, isolating main compounds, establishing their degradation kinetics or the taste detection threshold; studied the storage effect and the use of additives for improving shelf-life. New functional foods (cheese and olive oil) were developed, being saffron cheese the most successful as it has been patented and licenced to the industrial sector.

Other of my research topic has in common the use of wine by-products with an innovative approach: spraying oak or vine shoots aqueous extracts on the vineyard as bio-stimulants for improving grape quality; the use of dehydrated grape waste skins as a new oenological additive to improve the quality of poor wines before bottling. From this successful approach, BINO was created: an innovative beverage similar to a non-alcoholic wine.

**Safety:** I have studied the antibiotics content in white catfish by XLC-MS/MS, the antifungal properties of whey, the inhibition of mycotoxigenic fungi in the cheese surface, the development of feed formulations for feeding milking ewes with the aim of controlling *E. coli* and clostridia species, the microbiological quality of saffron from main producer countries including potential pathogens, the pesticides and environment pollutants presence in saffron and tap water by SBSE-TD-GC-MS, and the potential toxicity of the saffron floral waste used as food ingredient.

**Authenticity:** I have worked extensively in the development of antifraud methodologies, their validation and implementation as national (UNE) or international standards (ISO), mainly focused in the detection of the fraudulent use of colorants or pigments. But falsification of origin is also a very lucrative activity in saffron which has been studied using different markers and techniques: H,C and N stable isotopes, NIR and MIR spectroscopy, volatiles by GC-MS and e-nose, amino acids by HPLC-DAD, flavonoid fraction by LC-DAD-MS/MS, picrocrocin content by UV-Vis and HPLC.

**Healthy effects:** Isolated saffron compounds shown promising results in the reduction of the growth rate of prostate cancer tumour on animal model, the improvement of thawed sperm motility and survival after a cryopreservation process, the enhancement of aortic relaxation and the reduction of aortic vasoconstriction in hypertension, and finally, the reduction of intracellular lipid content in adipocytes culture during adipogenesis.

### Resumen del Currículum Vitae:

I obtained my Bachelor Degree in Chemistry in 1996 (UAM, Madrid). My former scientific career started on Dec 1998, when I earned a 3 month grant in food fraud at the Agricultural Chemistry Group within the School of Agronomy of the University of Castilla-La Mancha (UCLM). With this team, under the supervision of Prof. Alonso, I defended my PhD thesis in Sept 2004.

Successively, I was hired by UCLM in 4 R&D EU projects till I earned in Nov 2010, in a competitive call, a position as INCRECYT researcher. INCRECYT is the Castilla-La Mancha Regional Program for attracting top researchers supported by the European Social Fund (ESF), depending of the Albacete Science and Technology Park. After that, I started to act as Principal Investigator (PI) in some projects, while I maintained my previous compromises. As summary, I have participated in: 1 International CYTED project; 9 EU projects (1 Collaborative, 4 Collective on benefit of SMEs, 1 COST Action, 3 INTERREG), being PI in 2 of them; 3 national; 10 supporting actions (not considered actual projects); 3 regional; and 3 local (1 as PI) R&D projects funded by public administrations. I have been involved in 35 R&D contracts with private companies, being PI in 10 of them.

I have published 61 papers being 52 SCI journals (22 as 1st or 2nd author, 8 as last); 4 book chapters and 2 books published in 2 and 5 languages. I have presented 57 communications to national and international congress, 2 as invited speaker and 10 as oral presentations. I am co-author of 2 patents, one of them licenced to 2 companies paying currently royalties to UCLM.

I enjoyed 4 short post-doctoral stays abroad: in the Agricultural University of Athens (Greece) in 2006 and 2008, for working in the European White Book of saffron and improving my knowledge in FT-IR and FT-Raman techniques applied to quality control and food fraud detection; in 2011 in the UK governmental agency FERA (Food and Environment Research Agency) for training on isotopic analysis for food



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DESARROLLO E INNOVACIÓN

SECRETARÍA GENERAL  
DE CIENCIA, TECNOLOGÍA  
E INNOVACIÓN

DIRECCIÓN GENERAL  
DE INVESTIGACIÓN  
CIENTÍFICA Y TÉCNICA

SUBDIRECCIÓN GENERAL  
DE RECURSOS HUMANOS  
PARA LA INVESTIGACIÓN

authentication and geographical origin determination; and in 2014 in the Plant and Food Research Institute (New Zealand) for training on vegetal cell culture thanks to an EU COST fellowship.

I have supervised 3 undergraduate bachelor thesis, 2 research international trainees from Italy and Morocco with EU fellowships. Finally, I have supervised 7 PhD thesis till now, and the 8th one is on its way.

I got a one year Pedagogical Adaptation Course (CAP), starting formal higher education teaching of General Chemistry and Agricultural Chemistry at UCLM as **profesor asociado** in the course 2006-2007. During 4 consecutive academic years (2009-2013), I taught the subject titled Fundamentals of research in a Master within the School of Agronomy. I have followed 3 short courses for novel higher education tools, having 2 congress contributions for teaching innovation. In 2006 and 2008, I awarded the accreditations as **Ayudante Doctor** and **Contratado Doctor** for the National (ANECA) and Regional (ACCUM) agencies, respectively.

I have been member of the organiser/scientific committee on 4 International Congress as well as secretary of a summer course. From 2000 till now, I am member of an AENOR Subcommittee, and appointed 3 times as Spanish representative on worldwide ISO meetings. Currently, I am WP co-leader on a COST action. I collaborate as reviewer with 7 SCI journals.





MINISTERIO  
DE ECONOMÍA  
Y COMPETITIVIDAD

## AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2014

Turno de acceso general

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**Nombre:** TARREGA GUILLEM, AMPARO  
**Referencia:** RYC-2014-15137  
**Área Científica:** Ciencia y Tecnología de los Alimentos  
**Correo Electrónico:** tarregaamparo@gmail.com

### Título:

Modelling sensory perception from analytical and instrumental measurements.

### Resumen de la Memoria:

#### Research Career

I am Sensory Science Manager in the Division of Food Sciences at the University of Nottingham. Initially I studied Food Science and Technology (1999) and Pharmacy (2003). I received my doctorate concerning the modelling of the sensory attributes from instrumental measures in 2005. Since then I have developed my research work in the field of Sensory and Consumer Science. I have worked and gained a wide experience in different international and reputed research centres in Food Science:

- Visiting Fellow at the Department of Food Science & Technology of Cornell University, USA.
- Postdoctoral Researcher in the Flavour, vision and consumer behaviour Unit of INRA, France.
- Researcher at the Institute of Agrochemistry and Food Technology (IATA-CSIC), Spain.
- Sensory Science Manager at the University of Nottingham, United Kingdom.

#### Research expertise and line

My research focuses on using sensory science and instrumental techniques to understand and predict sensory perception and consumer response to food products. The ultimate goal is finding new strategies in the development of food products that respond to the needs of today's society: healthy food (low in fat, sugar, salt and saturated fat), satiating food or adapted for elderly people (dysphagia, lower perception or difficulties in mobility). In this framework, my research work has been focused on increasing knowledge on:

- 1) Functionality of food ingredients and its interactions in food complex matrices.
- 2) Crossmodal perception - how taste, aroma and texture integrate to form flavour perception
- 3) Methods and instrumental techniques for evaluating and predicting sensory properties.
- 5) Influence of nutritional information and claims in food choice of healthy products.

My current areas of interest also include:

- Investigating individual variation in perception e.g. supertasters and thermal tasters
- Measuring Emotional response to sensory properties of food

I have experience in a wide range of sensory evaluation techniques (trained panel and consumer studies) and the instrumental techniques for measuring food properties (colour, image, rheology and chemical compounds). I have also expertise in statistical methods for analysing sensory data and its relation with consumer's and instrumental data.

### Resumen del Currículum Vitae:

I earned two University Degrees, Food Science and Technology (1999), and Pharmacy (2003). In July 2001, I started my PhD studies at the Institute of Agrochemistry and Food Technology (IATA-CSIC), concerning the modelling sensory properties from instrumental measures in the framework of two projects focused in development of dietetic food products. I had the opportunity to do a pre-doctoral stay of five months at Cornell University (NY, USA). In October 2005 I defended my PhD thesis that was awarded with the **Extraordinary Prize of Doctoral Thesis** of University of Valencia.

Then, I got a postdoctoral contract at INRA (Dijon, France, Dec-2005 to Dec-2007), a centre of excellence in the study of food aroma chemistry and perception. I worked in a project focused in the development of an artificial mouth and my research focused in modelling the dynamics of flavour perception from analytical measurements of aroma release in vivo and in vitro. After that, I came back to Spain and I worked as researcher at the Institute of Agrochemistry and Food Technology, IATA-CSIC (JAE-Doc and Juan de la Cierva contracts, May 2008-June 2013). I participated in three national research projects where I investigated strategies to reduce fat in dairy products, saturated fat in bakery, and increasing satiating sensation in desserts. I also participated in two projects funded by food companies. After that, I worked at the company Casa Mas (September 2013-January 2014) as R&D Technician in the European Project OPTIFEL Food for Elderly, focused in finding strategies of development of ready to eat meals that cover the requirements (nutritional, convenience and sensory) to improve diet and wellness of elderly people.

Since May 2014 I work as Sensory Science Manager in the Division of Food Sciences at the University of Nottingham. I participate in different research and technological projects funded by International Food Companies focused in:

- Investigating the impact of individual variation in perception (genetic and phenotypic traits e.g. supertasters and thermal tasters) on food preference and dietetic habits.



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- Measuring Emotional response to sensory properties of food.
- Methodological comparison of same-different test and tetrad test for odour assesment

Summarising, I have participated in 9 national research projects, 2 European projects and 8 research and technological projects funded by food companies. The result of my scientific work is published in a total of 48 papers in SCI journals (37 in journals in the 25% of impact factor ranking) and 4 book chapters (2 CRC press, 1 Wiley). H index= 15. The results obtained have been presented in at least 20 international conferences, 9 oral communications (6 presented by me, 2 as invited speaker) and 19 posters. I have co-supervised 2 Ph-D thesis and 3 Master thesis and I am currently co-supervising 1 Ph-D thesis and 2 Master thesis. I am member of the Technic Committee AENOR CTN87 of Sensory Evaluation and I got the positive evaluation of ANECA for ◆Profesor Ayudante Doctor◆. I collaborate as reviewer in several SCI Journals (Food Hydrocolloids, LWT, Journal of Sensory Studies and Food Science and Technology International).