

CURRICULUM VITAE (CVA)

Part A. PERSONAL INFORMATION

		CV date	4 February 2025
First name	Antonia		
Family name	Garrido Frenich		

A.1. Current position

Position	Full Professor		
Initial date	9 th , August, 2009		
Institution	University of Almería (UAL)		
Department/Center	Chemistry and Physics	Faculty of Experimental Sciences	
Country	Spain	Teleph. number	+34 950015985
Key words	Chromatography, mass spectrometry, contaminants, bioactive compounds, food safety, environmental analysis, biological control, metabolomics		

A.2. Previous professional status (including breaks in research career, according to what is indicated in the call, indicate total months)

Period	Position/Institution/Country/Interruption cause
01/09/91 - 09/11/1993	Research staff in training /UAL/Spain/ Next position
10/11/93 - 05/02/1995	Associate Professor/ UAL/Spain/ Next position
06/02/1995 - 30/09/1999	Assistant Lecturer/ UAL/Spain/ Next position
01/10/99 - 18/01/2001	Interim Lecturer/ UAL/Spain/ Next position
19/01/2001 - 07/08/2009	Lecturer/ UAL/Spain/ Next position
08/09/2009 -	Full Professor/ UAL/Spain

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Graduate Chemistry	University of Granada/Spain	1991
PhD Chemistry	University of Almería/Spain	1994

Part B. CV SUMMARY (max. 5000 characters, including spaces) to complete this section, please read carefully: "Instructions to fill CVA"

Antonia Garrido (PhD, 1994) is Professor of Analytical Chemistry at the University of Almería (UAL) since 2009. She has been responsible of an official Master about Pesticide Residue Control (2006-2012), and since 2018 of another official Master about Advanced Chemistry Laboratory at the UAL. She has directed two Doctoral programs with quality mention, *Control of pesticides in food and the environment* (DCT2005-00325) and *Control of pesticide residues and contaminants* (MCD2008-00018). She is team leader of the research group Analytical Chemistry of Contaminants since 2004. The main research lines are focused on the development of methods for organic compounds, toxics and contaminants, as well as bioactive compounds and metabolites, with application in food safety and quality, and environmental and biological control. All these research lines are based on the use of chromatographic techniques coupled to low- and high-resolution mass spectrometry (HRMS) analyzers. Since its inception in research she has applied statistical data processing techniques, also addressing aspects in the field of qualimetry (validation, calibration, etc). All this has allowed that in recent years her research is oriented on the one hand towards the study of emerging compounds, metabolites in different food, environmental and biological matrices. On the other hand, it has initiated a new research line in the field of metabolomics; incorporating the nuclear magnetic resonance technique as a complement to the ones traditionally used (chromatography-mass spectrometry). He has made important contributions in reducing analysis times in multi-residue and multi-family methods, applying generic, semi-automated or green extraction techniques (Quechers, PLE, SBSE, SPME or NADES). In addition, the development of databases with HRMS measurements, together with the analysis in non-targeted modes (suspect screening and unknown) has allowed her to make important contributions to a better control of food safety and environmental. She has published more than 350 scientific articles in SCI journals, about 30



international book chapters, with +10200 citations (h index 54), and has also presented over 300 presentations in conferences. She is the editor of two international books related to the analysis of pesticides. She has participated in more than 60 research projects (international, national and regional), being responsible for more than 25 of them. She has supervised 28 PhD theses (+ 7 ongoing) and 38 MSc students and mentored over 30 visiting PhD students (Brazil, Argentina, Mexico, United Kingdom, Italy, Poland, China, Tunisia or Morocco). All PhD. graduates are mainly employed in three sectors: R&D in research centers, secondary education or private companies.

With respect to management, she held the positions at the UAL: Secretary of the Department of Hydrogeology and Analytical Chemistry (2005-2007), Director of the Secretariat of Scientific Equipment of the Vice-Rectorate of Research, Development and Innovation (2007-2012) and Secretary of the Bioethics Commission (2007-2012). She is also an expert in the AENOR working group AEN / CTN 034 / SC 04 "Analysis of food products, horizontal methods" since 2010. As regards transfer, since she began his career, has maintained continuous collaboration with companies. She has participated in 67 R+D+i contracts with companies, being a responsible researcher in 40 of them. She is also co-founder of the spin off, LAB SLU, whose trajectory is a clear example of success, with more than 100 employees, leader of analytical services, a clear international projection and integrated into the Tentamus Group (Germany). In this same section, she has three patents.

At the international level, she carries out several actions: (i) leading the contact with foreign groups, with whom in the last 5 years we have published 10 articles; (ii) presence by invitation in international events, 4 conferences in the last 4 years, (iii) co-direction of doctoral theses with international institutions or (iv) application for international projects (now she participates in two international projects, 406760/2022-5 (Brazil) and 2022.08978.PTDC (Portugal), another funded by the Horizon Europe Programme and a PRIMA).

For all of the above, she has been included in the U. Stanford world ranking "The World Scientists: World's Top 2% Scientists in the last 4 years", "Analytical Chemistry" area. Finally, indicate its usual collaboration with the State Research Agency, and other regional evaluation agencies, in calls for R&D&i projects, scientific infrastructure, six-year periods or human resources. Also, she collaborates in the evaluation of company projects with entities such as DNV GL - Business Assurance or SGS ICS Iberian. She is currently serving as a committee member at the Spanish Society of Analytical Chemistry and their Regional Group.

Part C. RELEVANT MERITS

C.1. Publications

J. Marin-Saez (CA); R. López-Ruiz, M.A.Faria, IMPLVO Ferreira, **A. Garrido Frenich** (2024). A comprehensive study on the digestion, absorption, and metabolization of tropane alkaloids in human cell models. *Journal of Hazardous Material*. 480, 136192. 10.1016/j.jhazmat.2024.136192. IF: 12.2, D1 (12/359).

R. Capilla-Flores, G. Egea-Castro, Rosalía López-Ruiz, R. Romero-González, **A. Garrido Frenich** (CA) (2024). Development of novel methods based on GC-HRMS and LC-HRMS for the determination of non-phthalate plasticizers in soil. *Science of the Total Environment* 917, 170150. <https://doi.org/10.1016/j.scitotenv.2024.170150>. IF: 8.2, D1 (31/359).

A. Reyes-Ávila, R. López-Ruiz, F.J. Egea González, R. Romero-González, **A. Garrido Frenich** (CA) 2024. Chemistry and development of bioinsecticides for safe and sustainable use. *Current Opinion in Environmental Science & Health* 41, 100568. <https://doi.org/10.1016/j.coesh.2024.100568>. IF: 6.7, Q1 (44/359).

B. Martín-García, R. Romero-González, J.L. Martínez Vidal, **A. Garrido Frenich** (CA) 2024. Suspect screening of pesticide co-formulants in fruits, vegetables and leaves by liquid and gas chromatography coupled to high resolution mass accuracy spectrometry: Potential impact on human health. *Food Chemistry* 434, 137555. <https://doi.org/10.1016/j.foodchem.2023.137555>. IF: 8.5, D1 (9/173).

R. López-Ruiz (CA), A.J. Maldonado-Reina, J. Marín-Sáez, R. Romero-González, J.L. Martínez-Vidal. **A. Garrido Frenich** 2023. Unravelling plant protection product analysis: Use of chromatography techniques (GC and LC) and HRMS. *Trends in Environmental Analytical Chemistry*. 37, e00191. 10.1016/j.teac.2022.e00191. (6/6) IF: 11.1 (D1, 1/106).

A. Rivera-Pérez, R. Romero-González, **A. Garrido Frenich** (CA) 2023. Untargeted ¹H-NMR-based metabolomics and multi-technique data fusion: A promising combined approach for geographical and processing authentication of thyme by multivariate statistical analysis. *Food Chemistry* 420, 136156. <https://doi.org/10.1016/j.foodchem.2023.136156>. IF: 8.5, D1 (9/173).



- A. Rivera-Pérez, R. Romero-González, **A. Garrido Frenich** (CA) 2022. Fingerprinting based on gas chromatography-Orbitrap high-resolution mass spectrometry and chemometrics to reveal geographical origin, processing, and volatile markers for thyme authentication. *Food Chemistry* 393, 133377. <https://doi.org/10.1016/j.foodchem.2022.133377>. IF: 8.8, D1 (8/142).
- A. Rivera Pérez, R. Romero González, **A. Garrido Frenich** (CA) 2022. Persistent organic pollutants (PCBs and PCDD/Fs), PAHs, and plasticizers in spices, herbs, and tea – A review of chromatographic methods from the last decade. *Critical Reviews in Food Science and Nutrition*, 62, 5224-5244. <https://doi.org/10.1080/10408398.2021.1883546>. IF:10.2, D1 (6/142).
- A. Rivera Pérez, R. Romero González, **A. Garrido Frenich** (CA) 2021. Application of an innovative metabolomics approach to discriminate geographical origin and processing of black pepper by untargeted UHPLC-Q-Orbitrap-HRMS analysis and mid-level data fusion. *Food Research International* 150, 110722. <https://doi.org/10.1016/j.foodres.2021.110722>. IF: 7.425, D1 (13/144).
- R. López-Ruiz, R. Romero-González, **A. Garrido Frenich** (CA). 2019. UHPLC-MS: An overview of the last decade. *Trends in Analytical Chemistry*. 118, 170-181. 10.1016/j.trac.2019.05.044. IF: 9.801 (D1, 2/86).

C.2. Congress

- L. Carbonell-Rozas, R. Romero González, **A. Garrido Frenich** (2023). Efficiency of natural deep eutectic solvents to extract phenolic compounds from tea samples by a micro-ultrasonic-assisted extraction. 25th International Symposium on Advances in Extraction Technologies- ExTech. Oral presentation. Tenerife (Spain).
- R. López Ruiz; J. Marín-Sáez, S.C. Cunha, SC Ferreira, **A. Garrido Frenich**. New ingredients in the preparation of cookies to mitigate acrylamide content. Trends in grain-based foods. Oral presentation. Bragança (Portugal) 2022.
- R. López Ruiz; A.J. Maldonado Reina; J. Marín-Sáez, R. Romero González, J.L. Martínez Vidal, **A. Garrido Frenich**. Characterization of agricultural products using chromatographic techniques coupled to high resolution mass spectrometry: more than just the active substance. 18th annual workshop on emerging HRMS and LC-MS/MS applications in environmental analysis and food safety. Oral presentation. Barcelona (España) 2022.
- J. Marín-Sáez, R. López Ruiz; R. Romero González, **A. Garrido Frenich**. Combination of analytical platforms for the comprehensive study of myclobutanil-based plant protection product degradation in tomato and grape. 18th annual workshop on emerging HRMS and LC-MS/MS applications in environmental analysis and food safety. Oral presentation. Barcelona (España) 2022.
- A.J. Maldonado Reina; R. López Ruiz; **A. Garrido Frenich**; R. Romero González. Non-target screening approach for plant protection product characterization: use of chromatographic techniques-high resolution mass spectrometry. International Conference on Non-Target Screening. Comunicación Oral presentation. Erding (Alemania) 2021.
- J. Arrebola, J. Marín-Sáez, A. Romera-Torres, R. Romero González, J.L. Martínez Vidal, **A. Garrido-Frenich**. Analysis of tropane alkaloids in teas and herbal teas by liquid chromatography coupled to high-resolution mass spectrometry (Orbitrap) and evaluation of the effect of tea making on their degradation. 2nd Global Forum for Directors of Tea Research Institutes. Conferencia invitada. Hangzhou (China). AÑO: 2019 (16-17 may)

C.3. Research projects

- Ref:PID2022-137122OB-I00. Analytical strategies for the control of emerging plastic-derived contaminants in agricultural soils. Ministerio de Ciencia e Innovación (Convocatoria 2022). **MR: A. Garrido Frenich and R. Romero González**. 01/09/2023-31/08/2026. Amount: 156250 €. **AGF: methods of analysis of emerging plasticisers and microplastics**.
- Ref.: 2022.08978.PTDC. Novel tools for exposure assessment of food contaminants by saliva multiple biomarker monitoring. National agency FCT – Fundação para a Ciência e Tecnologia (Portugal). **MR: Isabel MPLVO Ferreira (A. Garrido is research)**.01/01/2023-31/12/2025. Amount:133277,06 €. **AGF: determination of metabolites in saliva samples**.
- Ref: 406760/2022-5. Food safety and characterization of functional foods. National Council for Scientific and Technological Development. **MR: Fernando Mauro Lanças (A. Garrido is research)**.01/01/2023-31/12/2027. Amount: 1.076.744,73 €. **AGF: untargeted analysis of milk and juice samples**.
- Ref.: CPP2021-008672. Implementation of low field frequency nuclear magnetic resonance (LF-NMR) in control laboratories for quantitative studies and classification of food products and other industrial sectors. (NMR-CONTROL). Ministerio de Ciencia e Innovación (NextGenerationEU, PRTR). *Proyectos COLABORACIÓN PÚBLICO-PRIVADA 2021*. **MR: Sergio Marcos Estival and A.**



- Garrido.** 01/10/2022-30/09/2025. Amount: 1.190.882,73 € (165.166,00 € Universidad de Almería). **AGF:** application of metabolomics tools to the discrimination of oil samples and qRMN methods for biocides and drugs.
- Ref.: 101123409 (HORIZON-JU-CBE-2022-IA-04). Smart and flexible separation and valorisation of mixed bio-waste from along the agri-food value chain (MixMatters). Comisión Europea, Programa Horizonte Europa. Ferreira (A. Garrido is research).01/06/2023-31/15/2027. Amount: 5.651.163,50 € (208.093,75 €, financiación Universidad de Almería). **AGF:** target and untarget análisis of samples
- Ref.: UAL2020-FQM-B1943. Biopesticides of botanical origin: comprehensive evaluation of their composition and monitoring of their residues in food and environmental samples. University of Almería, Ministry of Economic Transformation, Industry, Knowledge and Universities of the Junta de Andalucía and European Regional Development Fund (ERDF) (ERDF Operational Program 2014-2020). **MR:** A. **Garrido** and R. Romero González. 01/01/2021-31/06/2023. Amount: 30000 €. **AGF:** GC and LC-HRMS methods for biocides and metabolite identification in food and environmental samples.
- Ref.: P18-RT-2329. Analytical control of triazole fungicides and their metabolites in agricultural and phytosanitary products. Ministry of Economy, Knowledge, Companies and University. Excellence Projects, 2018. **MR:** A. **Garrido Frenich**. 01/01/2020-31/12/2022. Amount:: 119800 €. **AGF:** GC and LC-HRMS methods for triazole fungicides and metabolite identification in food and phytosanitary products.
- Ref.: PID2019-106201RB-I00. Phytosanitary products: comprehensive evaluation of their composition and their residues in food and agricultural soils. Ministry of Science and Innovation (2019 call for "R&I&i projects" within the framework of state programs for the generation of knowledge and scientific and technological strengthening of the R&D&i system and r&d&i oriented towards the challenges of society). **MR:** A. **Garrido Frenich** and R. **Romero González**. 01/06/2020- 31/05/2023. Amount: 93170 €. **AGF:** GC and LC-HRMS methods for pesticides and cofomulantes and metabolite identification in food and phytosanitary products.
- Ref.: PlastiMarMed.FB. Caracterización de macro y microplásticos en la red trófica marina del Mar Mediterráneo. Ministerio para la Transición Ecológica. Convocatoria de concesión de ayudas de la Fundación Biodiversidad F.S.P., en régimen de concurrencia competitiva, para la conservación de la biodiversidad marina en España 2019. **MR.** 15/01/2020-15/09/20201. Amount: 151.171,14 €. A. **Garrido Frenich is researcher**. **AGF:** Analytical methods for microplastics.
- Ref.: Grant Agreement No 817936. Non-thermal physical technologies to preserve healthiness of fresh and minimally processed fruit and vegetables. Comunidad Europea. H2020-SFS-16-2018: Towards healthier and sustainable food. **MR:** **Vito Verardo** (A. **Garrido Frenich is researcher**). 01/05/2019-30/04/2022. Amount: € 321.889. **AGF:** Analytical methods for polyfenols in food samples.
- Ref. EQC2019-005599-P. Liquid chromatograph - ultra high resolution and sensitivity mass spectrometer. Ministry of Science, Innovation and Universities (FEDER). Call 2019: acquisition of scientific-technical equipment. **MR:** A. **Garrido Frenich**. 05/12/2019-04/12/2021. Amount: € 418.010,42.
- Ref.: RTC-2017-6170-2. Analytical advances to improve information on the quality and safety of edible vegetable oils and other high-fat vegetable food products. Ministry of Science, Innovation and Universities (FEDER). Call 2017: RETOS COLABORACIÓN. **MR:** **M^aE. Hernández** and A. **Garrido**. 01/10/2018-31/12/2021. 702.251,65 € (133.795,40 € UAL). **AGF:** Analytical methods for mycotoxins, MOS/MOAH and MCPDs in fat simples.
- Ref.: CTQ2015-69899-r. Study of the presence of trophanic alkaloids and their degradation products Ministry of Economy and Competitiveness and FEDER. Call 2015: National Plan of I+D + I. **MR:** A. **Garrido Frenich**. 01/01/2016-31 - 12/2018. Amount: € 94,380.

C.4. Contracts, technological or transfer merits

Co-founder in the year 2003 of the spin off Bioclinical Analytical Laboratory LAB S.L.U. of advanced analytical services.

Environmental monitoring of the ports of Almería and Carboneras and the Alquíán-Cabo de Gata environment. Port authority of Almería, Medgaz, S.A., Ronco and Cía S.L. and LÓPEZ GUILLÉN S.A. from 2008 and continues (annually renewable for about 70,000 €/year).

Strategies for the reduction of false positives of fosetyl-Al in almonds. DEPRADO CERVANTES S.L. **MR:** A. Garrido. Period 2022/2025. Amount: € 25,000.