

CV

PEDRO A. CABALLERO CALVO

2023 December



CV date	18/12/2023
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Part A. PERSONAL INFORMATION

First and Family name	PEDRO ANTONIO CABALLERO CALVO		
ID number	12761543Q	Age	52
Researcher codes	WoS Researcher ID	E-3642-2016	
	SCOPUS Author ID	7006167711	
	Open Researcher and Contributor ID (ORCID)	0000-0003-2285-6128	

A.1. Current position

Name of University/Institution	UNIVERSITY OF VALLADOLID		
Department	Department of Agriculture and Forestry Engineering, Food Technology, College of Agricultural and Forestry Engineering		
Address and Country	Av. Madrid, 44, 34004, Palencia, Spain		
Phone number	+34979108493	E-mail	pedroantonio.caballero@uva.es
Current position	Associate Professor	From	27/11/2008
UNESCO codes	3309 – Food Technology; 330907 – Cereal Products; 330920 – Food Properties; 330904 – Breadmaking		
Key words	Food Technology, cereal derivatives, breadmaking, physical properties, rheology, gluten-free, food ingredients		

A.2. Education

PhD	University	Year
PhD in Engineering	University of Valladolid	2006

A.3. JCR articles, h Index, thesis supervised...

- Research activity periods positively evaluated: **3** (last period evaluated 2011-2018)
- Teaching activity periods positively evaluated: **5** (last period evaluated 2018-2022)
- Rated Excellent in the evaluation of “Docentia” Programme (96 points out of 100)
- PhD **thesis** supervised (last 10 years): **2** finished and **3** under way
- Supervision of **55** MSc thesis (last 10 years) and **17** Degree Final Projects (last 10 years)
- **Citations** (from Web of Science)
Total Articles in Publication List: **33 (24 Q1; 9 Q2)**
Sum of the Times Cited: 2073
Average Citations per Article: **62,81**
- Chapters in scientific books (volumes): **5**
- Full papers in Conference Proceedings: **39**
- Presentation in Conferences: **110** (78, international).
- h index: **20** (WOS), **20** (SCOPUS)

Part B. CV SUMMARY (max. 3500 characters, including spaces)

The researcher's CV is characterized by a solid academic background in which he has obtained Extraordinary Awards in all his university studies (doctoral studies, Bachelor of Science and Food Technology and Bachelor of Technical Engineering). His professional activity is linked to the Area of



Food Technology at the University of Valladolid (UVa) since 1996, having been Assistant Professor since 1997. His research activity has been evaluated positively on three occasions since 1999 by CNEAI, and the University of Valladolid has also evaluated his teaching activity positively on four occasions since 1997. He has obtained an Excellent rating (96 points out of 100) of the teaching activity during the last evaluated period (Docentia Programme).

Since joining the University of Valladolid he has participated in 15 research projects funded in public calls: one international, seven national and seven regional. He has also worked in numerous projects of knowledge transfer to Industry (business contracts). As a result, he has published 41 scientific articles, of which 33 are indexed in the JCR; 110 communications to congresses, of which 78 are international, and 10 books and book chapters. In the last ten years he has directed two doctoral theses already defended and another three in progress; in this period he has also supervised 55 Master Thesis and 17 Degree Final Projects. The transfer of the results of his research is also reflected in the obtaining of two Spanish patents and one Utility Model, which he is about to transfer to Food industry.

His current research activity is focused on the study of novel food ingredients (mainly cereals and pseudocereals) from a physical, chemical, functional and nutritional point of view, to identify their suitability for the development of nutritionally improved cereal products suitable for populations with special needs like celiac or patients with dysphagia. In order to develop this activity he is also integrated in ProcerealTech research group, recognized as a Consolidated Research Unit by the Junta de Castilla y León at June 2017. In that group he is expert in the measurement of physical properties, rheological properties of doughs and gels, and the characterization of quality of baked products. Currently, he is responsible for a research line aimed at the treatment of cereal grains and pseudocereals with high hydrostatic pressures as a strategy to improve the quality and nutritional value of gluten-free products.

At present, the researcher leads the Research Group Food Industry Technology: Cereals and Derivatives (recognised by the University of Valladolid) and is the Vice-President of the Association of Food Scientists and Technologists of Castilla y León (ACTA/CL) (he was the President between 2013 and 2021). He also has experience in the management of research activities such as the direction of the Agricultural and Food Industries Unit in the R+D+i Area of Agrarian and Agri-Food Technology Centre (ITAGRA.ct). His activity is completed with a continuous dedication to the activities of academic management in the UVa, having been Vice-Rector of Palencia Campus of University of Valladolid (2010-2014) and Academic Secretary of Higher Technical School of Agricultural Engineering (University of Valladolid) (2008-2010), among other positions.

Part C. RELEVANT MERITS

C1. Teaching Activities at University of Valladolid

Since 1997 I have been responsible for different subjects within the Degree of Agricultural and Food Industry Engineering, the Master of Agricultural Engineering, and the Master of Food Quality, Development and Innovation: *Unit Operations, Food Technology, Fundamentals of Cereal Technology, Food Industry Productive Processes, Food Industry Management and Innovation, Food Ingredients and Additives and their Technological Functionality, and Nutrition and Food Innovation*. He is currently the coordinator of the Masters programme in Food Quality, Development and Innovation at the University of Valladolid.

C.2. Publications (including books) (10 last years)

Vicente, A., Villanueva, M., **Caballero, P.A.**, Lazaridou, A., Biliaderis, C.G., Ronda, F. (2023). Flours from microwave-treated buckwheat grains improve the physical properties and nutritional quality of gluten-free bread. *Food Hydrocolloids*, 109644.



- Vicente A.; Villanueva M.; **Caballero P.A.**; Muñoz J.M.; Ronda F. (2023) Microwave Modification of Quinoa Grains at Constant and Varying Water Content Modulates Changes in Structural and Physico-Chemical Properties of the Resulting Flours. *FOODS* 12(7), 1421. <https://doi.org/10.3390/foods12071421>
- Vicente, A. Villanueva M, **Caballero P.A.**, Muñoz, J.M., Ronda F. (2023) Buckwheat grains treated with microwave radiation: Impact on the techno-functional, thermal, structural, and rheological properties of flour. *Food Hydrocolloids* 137, 108328 <https://doi.org/10.1016/j.foodhyd.2022.108328>
- Gutiérrez, A.L., Villanueva, M., Rico, D., Harasym, J., Ronda, F., Martín-Diana, A.B., **Caballero, P.A.** (2023). Valorisation of Buckwheat By-Product as a Health-Promoting Ingredient Rich in Fibre for the Formulation of Gluten-Free Bread. *Foods*, 12(14), 2781. <https://doi.org/10.3390/foods12142781>
- Gutiérrez A.L.; Martín-Diana A.B.; Ronda F., Rico D., **Caballero P.A.** (2022) Development of a gluten-free whole grain flour by combining soaking and high hydrostatic pressure (HHP) treatments for enhancing its functional, nutritional and bioactive properties. *Journal of cereal science* 2022 pp. 103458. <https://doi.org/10.1016/j.jcs.2022.103458>. Cuartil Q2.
- Rico D., Villaverde A., Martínez-Villaluenga C., Gutiérrez A.L., **Caballero P.A.**, Ronda F., Peñas E., Frias J., Martín-Diana A.B (2020). Application of Autoclave Treatment for Development of a Natural Wheat Bran Antioxidant Ingredient. *Foods* 9, 781. <https://doi.org/10.3390/foods9060781> Cuartil Q1.
- S. Pérez-Quirce; **P.A. Caballero**; A. J. Vela; M. Villanueva, F. Ronda (2018) Impact of yeast and fungi (1→3)(1→6)-β-glucan concentrates on viscoelastic behavior and bread making performance of gluten-free rice-based doughs. *Food Hydrocolloids* 79, 382-390. Cuartil Q1. <https://doi.org/10.1016/j.foodhyd.2018.01.004>
- Caballero, P.A.** (2017). Stabilizing, thickening and gelling additives. In Mateos-Aparicio, I. (Ed.). *Aditivos Alimentarios*. Dextra Editorial, Madrid (Spain)
- De la Hera, E.; Talegón, M.; **Caballero, P.A.**; Gómez, M. (2013) Influence of maize flour particle size on gluten-free bread-making. *Journal of the Science of Food and Agriculture*, 93:924-932. Cuartil Q2. <https://doi.org/10.1002/jsfa.5826>
- Ronda, F.; Rivero, P.; **Caballero, P.A.**; Quilez, J. (2012). High insoluble fiber content increases in vitro starch digestibility in partially baked breads. *International Journal of Food Sciences and Nutrition*. 63 (8):971-977. Cuartil Q2. <https://doi.org/10.3109/09637486.2012.690025>
- Ronda, F.; Oliete, B.; Gómez, M.; **Caballero, P.A.**; Pando, V. (2011) Rheological study of layer cake batters made with soybean protein isolate and different starch sources. *Journal of Food Engineering*, 102:272-277. Cuartil Q1. <https://doi.org/10.1016/j.jfoodeng.2010.09.001>
- Ronda, F.; **Caballero, P.A.**; Quilez, J.; Roos, Y.H. (2011). Staling of frozen partly and fully baked breads. Study of the combined effect of amylopectin recrystallization and water content on bread firmness. *Journal of Cereal Science*. 53 (1): 97-103. Cuartil Q1. <https://doi.org/10.1016/j.jcs.2010.10.003>
- Gómez, M.; Manchón, L.; Oliete, B.; Ruiz-Paris, E.; **Caballero, P.A.** (2010) Adequacy of wholegrain non-wheat flours for layer cake elaboration. *LWT- Food Science and Technology*, 43:507-513. Cuartil Q1. <https://doi.org/10.1016/j.lwt.2009.09.019>
- Gómez, M.; Moraleja, A.; Oliete, B.; Ruiz-Paris, E.; **Caballero, P.A.** (2010) Effect of fibre size on the quality of fibre-enriched layer cakes. *LWT- Food Science and Technology*, 43:33-38. Cuartil Q1. <https://doi.org/10.1016/j.lwt.2009.06.026>

C.3. Patents (10 last years)



Rice flour modified by hydrothermal microwave treatment, method of production and uses. Inventors/authors/objectors: Felicidad Ronda Balbás; Marina Villanueva Barrero; Joanna Harasym; Jose M^a Muñoz Muñoz; **Pedro A. Caballero Calvo**; Sandra Pérez Quirce. Entity: University of Valladolid. Application number: P201830851. Country of registration: Spain. Date of registration: 29/08/2018.

Ready-to-eat adapted food product for patients with dysphagia. Inventors/authors/objectors: **Pedro A. Caballero Calvo**; Felicidad Ronda Balbás; Marina Villanueva Barrero; Joanna Harasym; Ane Arratibel García; Fabiola Juarez Muriel; Elena Roura Carvajal. Entity: University of Valladolid. Application number: 201831386. Country of registration: Spain. Date of registration: 14/09/2018. Companies: Fundación Alicia, Alimentación y Ciencia.

C.4. Research projects and grants (10 last years)

- Separation of macromolecules and nanoparticles by switched FFF/SEC and characterisation of their absolute molar mass, size and molecular conformation by combined MALS-UV-VISCO-dRI detection. (Ref: EQC2021-006985-P). Name of principal investigators: Felicidad Ronda Balbás. Institution: University of Valladolid. Funding entity: Ministry of Science and Innovation. Period: 1/1/2022-31/12/2023 (2 years) Project cost: € 411116 €
- Treatment of new grains of high nutritional value with microwave radiation. Molecular basis of the techno-functional changes induced for the improvement of gluten-free products (Tratamiento de nuevos granos de alto valor nutricional con radiación de microondas. Bases moleculares de los cambios tecno-funcionales inducidos para la mejora de los productos sin gluten) (TechGFree). **VA195P20**. IP: Felicidad Ronda. Funded: Consejería de Educación, Junta de Castilla y León/FEDER. Period: 2020-2023 (3 years). Project cost: € 264 000.
- Molecular and structural changes induced by emerging hydrothermal treatments for functional, sensory and nutritional improvement of gluten-free products [Cambios moleculares y estructurales inducidos por los tratamientos hidrotérmicos emergentes para la mejora funcional, sensorial y nutricional del producto sin gluten] (**PID2019-110809RB-I00**). IP: Felicidad Ronda. Funded: Ministerio de Ciencia e Innovación. Period: 2020-2024 (4 years). Project cost: €133000 (+Pre-doctoral grant)
- Innovative treatment of cereal grains and pseudocereals with high hydrostatic pressures as a strategy to improve the quality and nutritional value of gluten-free products. **Regional Ministry of Education (CYL)/FEDER (VA165G18)**. Leading Researcher: **P.A. Caballero**. Period: 2018-2020 (3 years). Project cost: €12000.
- Impact of microwave and ultrasound on gluten-free flours functionality: structuring ability in gluten-free breadmaking matrices Ministry of Economy and Competitiveness (**MINECO/FEDER (AGL2015-63849-C2-2-R)**). Leading Researcher: F. Ronda. Period: 2016-2020 (4 years); Project Cost: 84000 €
- Nutritional and functional improvement of gluten-free breads: addition of beta-glucans of different origins and molecular weights according to the health claims approved by the EFSA. Ministry of Economy and Competitiveness (**MINECO/FEDER (Ref: AGL2012-35088)**). Leading Researcher: F. Ronda. Period: 2013-2015 (3 years); Project Cost: 76.050 €
- Application of electromagnetic waves to gluten-free flours to adapt its structure and functionality to the needs of the food industry. Development of better quality products. **Regional Ministry of Education (CYL)/FEDER (VA-072P17)**. Leading Researcher: F. Ronda. Period: 2017-2019 (3 years). Project cost: €120000.
- Combination of enzymatic treatments and extrusion to modify the functional properties of flours. **Regional Ministry of Education (Ref: VA054A12-2)** Leading Researcher: M. Gómez. Period:



2012-2014. Project Cost: 30.000 €.

- Gluten-free bread making by incorporating structured protein networks (exogenous) and its impact on starch digestibility. **Regional Ministry of Education (Ref: VA 252A12-2)** Leading Researcher: F.Ronda. Period: 2012-2013. Project Cost: 30.000 €.

C.4. Contracts (10 last years)

- Laboratory experiences for the industrial implementation of microwave treatment of wheat flour. Project Directors: Jose María Muñoz Muñoz and Marina Villanueva; Company: Corporativo Bimbo S.A. DCV. Period: 2023-2024 (12 months). Project Cost: 28250 €
- Optimisation and validation of the freeze-drying process for edible flowers. Leading Researchers: P.A. Caballero; F. Ronda. Company: Innoflower S.L. Period: 2023. Cost: 2000€
- Parametrization and technological development of the process of lyophilisation of leaves, buds and edible flowers (FlowerLyoTech). Leading Researchers: **P.A. Caballero**; F. Ronda. Premio Lanzadera Universitaria-Company: Innoflower S.L. Period: 2023-2024. Cost: 1500€
- Industrial implementation of technology for microwave treatment of soft wheat flours to improve their baking properties [Implementación industrial de la tecnología de tratamiento de microondas de harinas de trigo de baja fuerza para la mejora de sus propiedades de panificación]. Principal researchers: F. Ronda; **P.A. Caballero**; M. Villanueva. Company: Corporativo Bimbo (Mexico). Period 10/5/2023-9/05/2024 (12 months). Project Cost: 248434€.
- Parameterization, optimization and modelling of the freeze-drying process of edible flowers (LiOptimisation) [Parametrización, optimización y modelización del proceso de liofilización de flores comestibles (LiOptimización)]. Leading Researchers: **P.A. Caballero**; F. Ronda. Premio Lanzadera Universitaria-Company: Innoflower S.L. Period: 2022-2023. Cost: 3000€
- Optimisation of the treatment process and pre-industrial testing of microwave-treated biscuit flour [Optimización del proceso de tratamiento y realización de prueba pre-industrial con harina galletera tratada con microondas]. Principal Researchers: F. Ronda; P.A. Caballero; Company: Corporativo Bimbo (Mexico). Period 2022-2023 (6 months): 11647€
- Transformation of rose hip into intermediate product [Transformación del escaramujo a producto intermedio]. Leading Researchers: F. Ronda; **P.A. Caballero**; Premio VI Convocatoria Premios I+D+I 2022, Generando Valor Rural en la Provincia de Palencia. Period: 2022-2023. Cost: 7500 €.
- Development of new food products through the integral use of natural pistachio nuts (PISTACHIO FOODS) [Desarrollo de nuevos productos alimenticios mediante el aprovechamiento integral del pistacho natural (PISTACHIO FOODS)]. Leading Researchers: **P.A. Caballero**; F. Ronda. Premio 3ª Convocatoria de financiación de proyectos de innovación rural para ayuntamientos de la provincia de Valladolid. Company: Pistacyl S.L. Period: 2021-2022. Cost: 8000 €
- Parameterization and technological development of the freeze-drying process of leaves, buds and edible flowers [Parametrización y Desarrollo Tecnológico del Proceso de Liofilización de Hojas, Brotes y Flores Comestibles (FlowerLyoTech)]. Leading Researchers: **P.A. Caballero**; F. Ronda. Premio Lanzadera Universitaria-Company: Innoflower S.L. Period: 2021-2022. Cost: 1500€+1500€ (LANZADERA UNIVERSITARIA+ ARTICULO 83)
- Characterisation of hemp seed varieties and by-products approved for production in castilla y león (superhealthy) [Caracterización de variedades de semillas de cáñamo y sub-productos aprobadas para su producción en Castilla y león (superhealthy)] Leading Researchers: F. Ronda; **P.A. Caballero**; Premio Lanzadera Universitaria-Company: José Manuel Miguel Castrillo (Farmer). Period: 2021-2022. Cost: 1000€+1000€ (LANZADERA UNIVERSITARIA+ ARTICULO 83).
- Optimisation of the physical modification process of wheat flour of low low protein content through



microwave-assisted treatment to improve its baking performance [Optimización del proceso de modificación física de harina de trigo floja mediante tratamientos asistidos con microondas para mejorar su desempeño panadero]. Leading Researchers: F. Ronda; **P.A. Caballero**; Company: Grupo Bimbo Mexico. Period 2020-2021 (6 months): 34222€

- Agreement for the promotion of the innovation and knowledge transfer on food products and optimise production processes in strategic sectors in Castilla y León: The flour sector. [Convenio para el fomento de la innovación y la transferencia de conocimientos sobre productos alimenticios y la optimización de los procesos de producción en sectores estratégicos de Castilla y León: El sector de la harina]. Leading researchers: **P.A. Caballero**, F. Ronda. Instituto Tecnológico Agrario de Castilla y León (ITACYL) and the Fundación Parque Científico of the Universidad de Valladolid. Period: 2018-2023 (4 years). 193.829 €
- Transformation and exploitation of hemp seeds produced in the province of Palencia for the production of superfoods (Acronym: CANNPOS) (Trasformación y aprovechamiento de semillas de cáñamo producidas en la provincia de Palencia para la producción de superalimentos (Acrónimo: CANNPOS)). Leading Researchers: F. Ronda; **P.A. Caballero**; Company: José Manuel Castrillo (Diputacion Prize 2020) Period 27 october 2020 a 30 june 2021. 3825€.
- Parameterisation of the freeze-drying process and study of the biological activity of freeze-dried edible flowers (Parametrización del proceso de liofilización y estudio de la actividad biológica de las flores comestibles liofilizadas). Researchers: **P.A. Caballero**, F. Ronda; Company: Innoflower S.L. Period: 28 September 2020 - 28 June 2020. Cost: 3000 €
- Shelf life study of gluten-free bread (Estudio de vida útil de pan sin gluten). Leading Researchers: F. Ronda; **P.A. Caballero**; Company: Amaritta Food S.L. Period: 2020 (2 months) Cost: 475,21 €
- Applicability of physical treatments to biscuit wheat flour [Aplicabilidad de tratamientos físicos a harina de trigo galletera (segunda prueba de concepto)]. Leading Researchers: F. Ronda; **P.A. Caballero**; Company: Grupo Bimbo Mexico. Period 2020 (3 months): 6205€
- Applicability of physical treatments to improve the baking properties of non-baking wheat. Leading Researchers: F. Ronda, **P.A. Caballero**; Company: ADDIMENT (Mexico) representing to Grupo Bimbo (Mexico). Period: 2019 (3 months). 6354 €
- Study of the transformation of the canaryseed (*Phalaris canariensis*, L.) as a tool for rural development in the province of Palencia" (Winner of the second prize of the Diputación de Palencia "Generando Valor Rural Provincia de Palencia" 2017). Leading researcher: **P.A. Caballero**. Company; Fitopal S.L. 2017-2018 (6 months) 9680€
- Optimisation of natural pistachio pre-treatment and packaging processes. (Winner of the first prize of the Diputación de Valladolid rural entrepreneurship innovation). Leading researcher: **P.A. Caballero**. Company; Pistacyl S.L. 2017 (5 months) 8000€
- Enrichment of Breads with cereal β -Glucans. Project Director: **F.Ronda**; Company: Biofactoría Naturae Salus S.A. Period: 2016 (1 month). Project Cost: 2100 €.
- Study of the technological characteristics of different cultivars of *Fagopyrum esculentum*, M. and the use of its flour as a raw material in the production of gluten-free foods. Leading researcher: **P.A. Caballero**. Company: CIFA Cantabria. 2011 (7 months) 3840 €
- Research and Healthy Food Ingredients. Project Director: M. Gómez. Company: Galletas Siro, S.A. Period: 2009-2011 (2.5 years). Project Cost: 286000 €

C.5 Institutional responsibilities:

- Director of Research Group Food Industry Technology: Cereals and Derivatives (recognised by the University of Valladolid) (2017-to the present)



- Vice-President of the Association of Food Scientists and Technologists of Castilla y León (ACTA/CL) (2021-to the present)
- President of the Association of Food Scientists and Technologists of Castilla y León (ACTA/CL) (2013-2021)
- Vice-Rector of Palencia Campus of University of Valladolid (2010-2014)
- Director of the University Bachelor Degree in “Agricultural and Food Industry Engineering” of the Higher Technical School of Agricultural Engineering (University of Valladolid) (2009-2010).
- Director of the Agricultural and Food Industries Unit in the R+D+i Area of Agrarian and Agri-Food Technology Centre (ITAGRA.ct, Palencia, Spain) (2008-2010).
- Academic Secretary of Higher Technical School of Agricultural Engineering (University of Valladolid) (2008-2010)
- Academic Secretary of Department of Agricultural and Forestry Engineering (University of Valladolid) (1999-2008)
- Director of the Food Technology Area of University of Valladolid (1999-2005).

C.6. Research Stays Abroad (10 last years):

- Wrocław University of Economics (Poland), Adaptive Food Systems Accelerator Research Centre, with Prof. J. Harasym, 2022, (1 month).
- Wrocław University of Economics (Poland), Adaptive Food Systems Accelerator Research Centre, with Prof. J. Harasym, 2019, (1 month).

C.7. Evaluation Activities:

- Editorial Board Member of FOODS ((ISSN 2304-8158; MDPI Open Access Journal)
- Reviewer of Scientific Journals (SCI): Applied Microbiology and Biotechnology, Journal of Cereal Science, Food Science and Technology International, European Food Research and Technology, Cereal Chemistry, Ciencia y Tecnología Alimentaria, Journal of Food Biochemistry, Food Chemistry.
- Reviewer of Research, Development and Innovation Projects (R+D+i) in the context of RD 1432/2003 (Spanish Ministry of Science and Technology) for different certification companies since 2009: AENOR, ACERTA, DNV GL-Business Assurance, OCA-CERT-Instituto de Certificación and European Quality Assurance (EQA) (42 projects evaluated in the last 10 years).