

CV date	03/07/2019
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Part A. PERSONAL INFORMATION

First and Family name	Paloma López García		
ID number	50795905Z	Age	68
Researcher numbers	Researcher ID	L-1583-2014	
	Orcid code	0000-0001-8755-8952	

A.1. Current position

Name of Institution	Consejo Superior de Investigaciones Científicas (CSIC)		
Department/Center	Microbial and Plant Biotechnology/Biological Research Center (CIB)		
Address and Country	Ramiro de Maeztu 9, 28040 Madrid, Spain		
Phone number	34-918373112. Ext. 4203	E-mail	plg@cib.csic.es
Current position	Investigadora Científica of CSIC	From	4-3-1992
Espec. cód. UNESCO	230221, 240902, 241499 (Genética bacteriana), 330909, 330910, 330901		
Palabras clave	Lactic acid bacteria, molecular microbiology of bacteria, probiotic, prebiotic, exopolysaccharides, vitamins		

A.2. Education

PhD	University	Year
Bachelor degree in Biology	Universidad Complutense of Madrid	1975
PhD in Biology	Universidad Complutense of Madrid	1978

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

Total number of publications 137. of them 125 are detailed at <https://publons.com/researcher/2489070/paloma-lopez/>. Attending to that the h-index is 33. Total citations during the last 20 years 3,579. In addition, in Research gate the score is 39.14 It is estimated that 80-85% of the publications are in the Q1. Supervision of thesis: 10. Patent applications: 11. 6 Sexenios from 1976-2011. No more applications because the permitted maximum was achieved.

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

PhD work supervised by Prof Manuel Espinosa studying chromosomal transformation in *Bacillus subtilis* at the Institute of Immunology (II, CSIC). Postdoctoral research period (1979-1984) working on binding and uptake of DNA in *B. subtilis* supervised by Dr. Mirosława Piechowska at Polish Academy of Science (Warsaw, Poland) and also at II. Furthermore, at Brookhaven National Laboratory (Upton, USA) supervised by Dr. Sanford Lacks working on: (i) the development of cloning system generating plasmids vectors and (ii) the discover of the facilitation mechanism in plasmid transfer, with genetic exchange between plasmid and chromosome in *Streptococcus pneumoniae*. Permanent position in CSIC at CIB since 1-2-85: Colaboradora Científica until 4-3-92 and Investigadora Científica since then. During this period the work involving *S. pneumoniae* allowed characterization of: i) its folic acid biosynthetic pathway; ii) the DNA polymerase I showing essentiality of its 5'-3' exonucleolytic activity and implication in plasmidic rolling circle replication, and the role of the YycFG two component system in expression of the fatty acid biosynthetic pathway. On 1991, the group of Molecular Biology of Gram-positive bacteria led by me was created. Since then the group develops research lines involving beneficial lactic acid bacteria (LAB) as follows. **Citrate fermentation.** This yields compounds responsible for the aroma and taste of butter and cheeses. We characterized the *cit* operon responsible for transport and conversion of citrate into pyruvate in *Weissella paramesenteroides*, and its regulation at the transcriptional level by the CitI activator and

presence of citrate. We have demonstrated that in *L. lactis* the transport and conversion of citrate to diacetyl is activated at the transcriptional level as a response to the acidic stress. Also, we have proposed mechanisms of post-transcriptional regulation for the production of the AS-48 bacteriocin by *Enterococcus faecalis*. **Biogenic amines production.** We studied tyramine and putrescine production by dairy and wine LAB, and demonstrated that is specie specific and contributes to bacteria-host interaction or to resistance to gastric stress. **Proteomic studies of LAB.** We performed 2D-gels proteomic global analysis to identify proteins included in: (i) *L. lactis* metabolisms, (ii) heat shock response of *Lactobacillus plantarum* and (iii) the *Oenococcus oeni* proteome. **Development of functional food.** This involves the discovery of probiotic bacteria and prebiotic or immunomodulating compounds. Thus, our current and future lines of research include the characterization of homopolysaccharide (HoPS)-producing LAB and their polymers. We demonstrated that β -glucans synthesised by LAB confer to the producing bacteria immunomodulatory properties and increase their adhesion capability to enterocytes; the HoPS are able to immunomodulate human macrophages and zebrafish larvae; the LAB high molecular weight dextrans and not the commercial ones have antiviral effect against salmon viruses and immunostimulate rainbow trout *in vivo*. Also, we contributed and we shall continue characterizing riboflavin-producing probiotic LAB and developing food enriched in dextran and vitamin B₂. **Development of plasmidic vectors.** We developed and commercialized (<http://solmeqlas.com/gb/118-expression-vectors-and-kitsBAL>) plasmids based on fluorescent GFP and mCherry proteins and validated their utility for BAL detection during interaction with eukaryotic cells and in zebrafish models, and for evaluation of gene expression.

Part C. RELEVANT MERITS

C.1. Publications (including books)

There are included only some recent experimental works and a revision from the last 10 years. In all of them, I have been the corresponding author (*).

1. Notararigo, S., Varela, E., Otal, A., Antolin, M., Guarner, F., **López P***. (2022). Anti-inflammatory effect of an O-2-substituted (1-3)- β -D-glucan produced by *Pediococcus parvulus* 2.6 in a Caco-2 PMA-THP-1 co-culture model. *Int J Mol Sci* 23(3), 1527; <https://doi.org/10.3390/ijms23031527>.
2. Besrou-Aouam, N., Fhoula, I., Hernández-Alcántara, A.M., Mohedano, M.L., Najjari, A., Prieto A, Ruas-Madiedo P, **López P***, Ouzari H.I. (2021). The role of dextran production in the metabolic context of *Leuconostoc* and *Weissella* Tunisian strains. *Carbohydr. Polym.* 253:117254. <https://doi.org/10.1016/j.carbpol.2020.117254>
3. Notararigo, S., Varela, E., Otal, A., Antolín, M., Guarner, F., Prieto, A., **López, P***. (2021) Evaluation of an O2-substituted (1, 3)- β -D-glucan, produced by *Pediococcus parvulus* 2.6, in *ex vivo* models of Crohns disease. *Front Microbiol* 12:88. <https://doi.org/10.3389/fmicb.2021.621280>.
4. Hernández-Alcántara, A., Pardo, S., Mohedano, M.L., Vignolo, G., de Moreno de LeBlanc, A., LeBlanc, J.G, Aznar, R., **López, P.*** (2020). The ability of riboflavin-overproducing *Lactiplantibacillus plantarum* strains to survive under gastrointestinal conditions using mCherry labeling. *Front. Microbiol.* 11:591945. <https://doi.org/10.3389/fmicb.2020.591945>.
5. Llamas-Arriba, M.G., Hernández-Alcántara, A.M., Yépez, A., Aznar, R., Dueñas, M.T., **López P.*** (2019) Functional and nutritious beverages produced by lactic acid bacteria. Chapter 12 in *The Science of beverage vol. 12 Nutrients in beverages* Chapter 12. pp 419-466. Alexandru Mihai Grumezescu and Alina Maria Holban, Eds., ELSEVIER (Academic Press), Cambridge, UK, eBook ISBN: 9780128169254. Paperback ISBN:9780128168424.

6. Mohedano, M.L., Hernández-Recio, S., Yépez, A., Requena, T., Martínez-Cuesta, M.C., Peláez, C. Peláez MC, Russo. P, LeBlanc, J.G., Spano, G., Aznar, R. , **López, P***. (2019). Real-time detection of riboflavin production by *Lactobacillus plantarum* strains and tracking of their gastrointestinal survival and functionality *in vitro* and *in vivo* using mCherry labeling. *Front Microbiol.* 10:1748. doi: 10.3389/fmicb.2019.01748.
7. Besrouer-Aouam N, Mohedano ML, Fhoula I, Zarour K, Najjari A, Aznar R, Prieto A, Ouzari, H-I, **López P***. (2019). Different Modes of Regulation of the Expression of Dextranucrase in *Leuconostoc lactis* AV1n and *Lactobacillus sakei* MN1. *Frontiers in Microbiology* 10(959). doi: 10.3389/fmicb.2019.00959.
8. Zarour K, Prieto A, Pérez-Ramos A, Kihal M, **López P***. (2018). Analysis of technological and probiotic properties of Algerian *L. mesenteroides* strains isolated from dairy and non-dairy products. *J. Funct Foods* 49:351-361.
9. Pérez-Ramos A, Mohedano ML, Pardo MA, **López P***. (2018). β -Glucan-producing *Pediococcus parvulus* 2.6: Test of probiotic and immunomodulatory properties in zebrafish models. *Front Microbiol* 9:1684. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6068264/>.
10. Zarour K, Llamas MG, Prieto A, Rúas-Madiedo P, Dueñas MT, Fernández de Palencia P, Aznar R, Kihal M, **López, P***. (2017). Rheology and bioactivity of high molecular weight dextrans synthesised by lactic acid bacteria. *Carbohydr Polym* 174:646–657.
11. Pérez-Ramos A, Werning ML, Prieto A, Russo P, Spano G, Mohedano ML, **López P***. (2017). Characterization of the sorbitol utilization cluster of the probiotic *Pediococcus parvulus* 2.6: genetic, functional and complementation studies in heterologous hosts. *Front Microbiol* 8:2393. <https://doi.org/10.3389/fmicb.2017.02393>.
12. Náchter-Vázquez M, Iturria, I., Zarour, K., Mohedano, M.L., Aznar, R., Pardo, M.A., **López P***. (2017). Dextran production by *Lactobacillus sakei* MN1 coincides with reduced autoagglutination, biofilm formation and epithelial cell adhesion. *Carbohydr Polym* 168:22-31.
13. Zarour, K., Llamas, M.G., Prieto, A., Rúas-Madiedo, P., Dueñas, M.T., Fernández de Palencia, P., Aznar, R., Kihal, M. and **López, P***. (2017). Rheology and bioactivity of high molecular weight dextrans synthesised by lactic acid bacteria. *Carbohydr Polym* 174: 646–657.
14. Mohedano, M.L., Amblar, M., de la Fuente, A., Wells, J. and **López, P***. (2016). The response regulator YycF inhibits expression of the fatty acid biosynthesis repressor FabT in *Streptococcus pneumoniae*. *Frontiers Microbiol* 7:1326. <https://www.frontiersin.org/articles/10.3389/fmicb.2016.01326/full>.
15. Náchter-Vázquez, M., Ballesteros, N., Canales, A., Rodríguez Saint-Jean, S., Pérez-Prieto, S.I., Prieto, A., Aznar, R., **López, P***. (2015). Dextrans produced by lactic acid bacteria exhibit antiviral and immunomodulatory activity against salmonid viruses. *Carbohydr Polym* 124:292–301.
16. Pérez-Ramos, A., Nacher-Vazquez M., Notararigo S., **López P***, Mohedano ML. (2015). Current and future applications of bacterial extracellular polysaccharides. In: *Probiotics, Prebiotics, and Synbiotics: Chapter 22*. Eds. Victor R. Preedy and Ronald Ross Watson. Elsevier Oxford, UK. ISBN: 9780128021897.
17. Notararigo, S., Náchter-Vázquez, M., Ibarburu, I., Werning, M.L., Fernández de Palencia, P., Dueñas, M.T., Aznar, R., **López, P***, Prieto, A. (2013). Comparative analysis of production and purification of homo- and hetero-polysaccharides produced by lactic acid bacteria. *Carbohydr Polym* 93:57–64.

C.2. Research projects and grants

1. Title of the Project: Selection and characterization of B2 vitamin- and dextran-producing lactic acid bacteria for the development of bread and dairy functional products. Funding entity: Ministry of Science, Innovation and Universities. Duration: January 2019 to December 2022. Principal Scientist (PS): **Paloma López and Gloria del Solar**. Funding for CIB: 228.448,00 €
2. Title of the project: Caracterización proteómica de las respuestas al estrés de calor de ácido de bacterias del ácido láctico probióticas Funding entity: CSIC. Project 2011820E078. Duration: October 2018 to October 2019. PS: **Paloma López**. Funding for CIB:14.600 €

3. Title of the project: Alimentos vegetales con funcionalidad probiótica para poblaciones infantiles desnutridas (ProInfant). Funding entities: CYTED Project 917PTE0537 and Ministerio de Economía y Competitividad (MINEICO, Spain) Project: PCIN-2017-075. Duration: January 2017- to January 2020. Coordinator Patricia Ruas Madiedo. Coordinator group (CSIC, Spain) with participation of group of **Paloma López** and Gloria del Solar at CIB. Funding for CIB: 20.000 €
4. Title of the project: Desarrollo y evaluación de alimentos funcionales basados en homopolisacáridos bacterianos. MINEICO project AGL2015-65010-C3-1-R. Duration: January 2016-October 2019. PS: **Paloma López**. Funding for CIB: 133.100 €
5. Title of the project: Bacterias lácticas y su relación con la salud y la calidad y seguridad de los alimentos (RedBAL). Project AGL2015-71923-REDT. Ministerio de Economía y Competitividad. Duration: December 2015-December 2018. PS at CIB: **Paloma López**. Coordinator: Patricia Ruas. Total funding: 40.000 €
6. Title of the project: Identificación de polisacáridos prebióticos y bacterias probióticas con capacidad inmunomoduladora para su uso en nuevos alimentos funcionales. Funding entity: Ministerio de Economía y Competitividad, Project AGL2012-40084-C03. Participating Entities: CIB and Universidad del País Vasco (UPV). Duration: January 2013-January 2016. Coordinator and PS at CIB: **Paloma López**. Funding for CIB: 110.000 €
7. Title of the project: Estirpes de *Lactobacillus* y *Pediococcus* productoras de glucano. Evaluación de sus características probióticas y análisis de las propiedades físico-químicas y funcionales de sus exopolisacáridos. Funding Agency: Ministerio de Ciencia e Innovación, proyecto AGL2009-12998-C03. Participating Entities: CIB and UPV. Duration: January 2010-August 2014. Coordinator and PS at CIB: **Paloma López**. Funding for CIB: 140.400 €
8. Title of the project: Controlling biogenic amines in traditional food fermentations in regional Europe. Funding entity: European Union FP7 Project KBBE-CT-2007-21144. Coordinator Julius Lolkema, (University of Groningen, The Netherlands). Duration: January 2008-December 2010. PS at CIB: **Paloma López**. Funding for CIB: 300.875 €
9. Title of the project: Prebióticos y probióticos para la elaboración de alimentos funcionales. Funding entity: Ministerio de Educación y Ciencia (Spain). Project AGL2006-C05-11932. Participation entities: CIB, UPV and Valencia University. Duration: January 2006-January 2010. Coordinator and PS at CIB: **Paloma López**. Funding for CIB: 94.622 €

C.3. Contracts

Title of the contract: Nuevos mecanismos de acción para productos antimicrobianos. Funding company: SALVAT S.A. Participating entities: CIB, SALVAT S.A. 2006 - 2009. Investigador responsable: Paloma López. Number of participating researchers: 3. Funding for CIB: 157.000 €

C.4. Patents

Inventors: M Nácher, **P López**, A Prieto, S I Pérez, S Rodríguez, ML Mohedano, R Aznar. Title: Secuencia de nucleótidos codificante de una enzima con actividad dextransacarasa, células que la expresan y su uso para la obtención de exopolisacáridos con actividad antiviral y composiciones que los contienen. Spanish Patent: 2 526 264. Country of priority: Spain. Concesion. 25.11.2015. Titular entity: CSIC.

Inventors: T. García, M.L. Mohedano, M.L. Pérez, P. Fernández de Palencia, D. Boden, J. Wells, C. Peláez, **P. López**, T. Requena. Title: Vectores de fusión transcripcional para regiones promotoras uni- y bidireccionales para su uso en bacterias lácticas. Spanish Patent application: P201130356, PCT/ES2012/070163 application. Country of priority: Spain. Priority date: 2011. Titular entity: CSIC. Commercialized by Solmeglas.

C.5. Directed thesis

Five thesis since 2015

1. Title: Caractérisation des biopolymères synthétisés par les bactéries lactiques
Doctorate: Norhane Besrou Aouam. Facultad: Faculté des Sciences de Tunis, Université

Tunis El Manar, Tunis, Tunes. Junio 2021. Directors: Ouzari Cherif Hadda-Imene y **Paloma López**.

2. Título: Caracterización genética y funcional de la bacteria probiótica *Pediococcus parvulus*

2.6. Doctorate: Adrián Pérez Ramos. Complutense University of Madrid. 2019. Directors: **Paloma López** y M^a Luz Mohedano.

3. Título: Etude de la diversité phénotypique, génotypique et aptitudes technologiques des souches de *Leuconostoc* isolées localement. Doctorate: KENZA Zarour. University of Oran, Argelia. 2018. Directors: Mebrouk Kihal and **Paloma López**.

4. Título: Estudio en modelos *in vitro* y *ex vivo* de los efectos inmunomoduladores del (1-3)- β -D-glucano sustituido en posición O-2 producido por bacterias ácido lácticas. Doctorate: Sara Notararigo. UCM. 2015. Director: **Paloma López**.

5. Título: Dextranos de bacterias lácticas aisladas de productos cárnicos: caracterización y aplicaciones. Doctorate: Montserrat Nácher Vázquez. University of Valencia. 2015. Directors: Rosa Aznar and **Paloma López**.

C.6. Institutional responsibilities

- Head of the Department of Structure and Function of Proteins at CIB. 2001-2003.
- Head of the Department of Molecular Microbiology and Biology of Infections at CIB. Since November 2009 to March 2012.
- Member of Committees of infrastructures and of biosafety and bioethics at CIB. 2004-2013.

C.7. Member of Scientific Societies

Member of Spanish societies of: Microbiology (since 1985) , Biochemistry (since 1987), Biotechnology (1991) and Probiotic and Prebiotics (2004).

C.8. Other merits

- Evaluator of projects from: the ANEP (since 1995), Autonomic programs (for example Generalitat Valenciana prometeo 2011), the spanish FIS (2007 y 2010), the Fondo de Ciencia y Tecnología argentino (FONDICIT, SINCE 1999), the National Foundation for Science (Estocolmo, Suecia, 1999 y 2001), the Israel Science Foundation (2006), Programa Iberoamericano de Ciencia y Tecnología para el Desarrollo (CONICET 2009, 2010 y 2011), National Research Foundation of South Africa (2012), Polish National Science Center (2013 and 2018), NILS mobility projects e Innovation Fund Denmark (2015, 2017, 2020). EUROSTARS program of European Union, EUREKA projects (2017). Netherlands Organization for Scientific Research NWO (2019).
- Coordinator of national and international projects since 1988.
- Co-ordinator of the multinational Project of the European Union FP5. Fermentation of Food Products: Optimised Lactic Acid Bacteria Strains with Reduced Potential to Accumulate Biogenic Amines. 2003-2006.
- Member of the Manager Committee of the Spanish network of LAB. Since 2007-.
- Co-organizer of VI, IX and XIII meeting of the Spanish network of LAB. Madrid. June. 2013, 2015, 2019.
- Co-organizer of the Antimicrobial Drug Discovery Conference. Madrid July. 2013.
- Topic editor of Frontiers in Microbiology. Topic: Industrial and health applications of lactic acid bacteria and their metabolites. <https://www.frontiersin.org/research-topics/7086/industrial-and-health-applications-of-lactic-acid-bacteria-and-their-metabolites>. (2018-1019).