CURRICULUM VITAE ABREVIADO (CVA)

IMPORTANT – The Curriculum Vitae cannot exceed 4 pages. Instructions to fill this document are available in the website.

Part A. PERSONAL INFORMATION

First name	Pilar		
Family name	García Suárez		
Gender (*)	Female	Birth date (dd/mm/yyyy)	09/03/1965
Social Security, Passport, ID number	32870312T		
e-mail	pgarcia@ipla.csic.es	URL Web	
Open Researcher and Contributor ID (ORCID) (*)		0000-0003-1213-8165	

(*) Mandatory

A.1. Current position

Position	Staff Scientist			
Initial date	11-9-2009			
Institution	Agencia Estatal Consejo Superior de Investigaciones Científicas, CSIC			
Department/Center	Tecnología y Biotecnología de Productos Lácteos	Instituto de Productos Lácteos de Asturias, IPLA-CSIC		
Country	Spain		Teleph. number	985893420
Key words	Phage, endolysin, biofilm, *Staphylococcus*, Food Safety			

A.2. Previous positions (research activity interuptions, indicate total months)

Period	Position/Institution/Country/Interruption cause
1-2-2005 to 10-9-2009	Program Ramón y Cajal/CSIC/Spain (no interruptions)

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
B.S Biology	University of Oviedo, Spain	1983-1988
PhD Degree in Biology (Microbiology)	University of Oviedo, Spain	1989-1992

(Include all the necessary rows)

Part B. CV SUMMARY *(max. 5000 characters, including spaces)*

Most part of my research career has been focused on the exploitation of bacteriophages as genetic tools to be applied in the food industry. In this way, two main research areas can be distinguish: i) bacteriophages infecting lactic acid bacteria as a most important problem in the dairy industry, and ii) bacteriophages as antimicrobial agents (human therapy and food safety). Throughout both stages common subjects have been developed including: isolation and morphological characterization of bacteriophages, sequencing and bioinformatic analysis of bacteriophage's genome, transcriptomic and proteomic analysis of phage encoded genes, expression and purification of relevant phage proteins, study of phage lytic activities, design and analysis of bacteriophage resistant strains. At present, biopreservation of dairy products by phages has become the main topic of my research. The design of phages mixtures and phage encoded products as biopreservatives against food-borne bacteria led us to apply predictive microbiology and hurdle technology as methods in the improvement of food safety. Moreover, the antibiofilm properties of phages and phage-encoded proteins are also being an important

subject of our studies. My scientific contribution have been published by 101 articles SCI among them 76 in Q1 journals; also 21 articles no SCI, 13 book chapters and 2 books. This scientific production represents an h-index: 38 (SCOPUS). Regarding the training of young researchers, I have supervised 7 (+ 2 on going) PhD Thesis. Most of these students have already started a scientific career (see below).
Along these years my research has been continuously funded by regional (6), national (8) and international (10) projects. This has contributed to create and strength a research line about new antimicrobials based on phages with an international recognition. In addition, we are in collaboration with national and international companies interested to bring this knowledge to the market, in both the food industry and in the clinical sector. The crisis of antibiotic resistance and the need of sustainability in food production had speed up the importance of our research. Indeed, the development of new antimicrobials with application in different fields (from human and animal therapies to disinfection) have allowed us to start several collaborations, some of them with international funding. Additionally, my role as coordinator of the Spanish Network of Bacteriophages provide our team of a visibility in both national and international fields.

Part C. RELEVANT MERITS *(sorted by typology)*

C.1. Publications *(see instructions)*

1. Agún S., Fernández L., Rodríguez A. and **García P**. 2022. Deletion of the amidase domain of endolysin LysRODI enhances antistaphylococcal activity in milk and during fresh cheese production. Oct;107:104067. doi: 10.1016/j.fm.2022.104067.
2. Molina, F., M. Menor-Flores, L. Fernández, M. A. Vega-Rodríguez, **P. García**. 2022. Systematic analysis of putative phage-phage interactions on minimum-sized phage cocktails. Scientific Reports. doi: 10.1038/s41598-022-06422-1.
3. Huang, S., Tian, Y., Wang, Y., **García, P.,** Liu, B., Lu, R., Wu, L., Bao, H., Pang, M., Zhou, Y., Wang, R., Zhang, H. 2022. The broad host range phage vB_CpeS_BG3P is able to inhibit *Clostridium perfringens* growth. Viruses 25;14(4):676. doi: 10.3390/v14040676.
4. Rendueles C., Duarte A. C., Escobedo S., Fernández L., Rodríguez A., **P. García**, Martínez B. 2022. Combined use of bacteriocins and bacteriophages as food biopreservatives: is it time to join forces?. International Journal of Food Microbiology 368:109611. doi: 10.1016/j.ijfoodmicro.2022.109611.
5. Andrea Jurado, Lucía Fernández, Ana Rodríguez, **Pilar García**. 2022. Understanding the mechanisms that drive phage resistance in staphylococci to prevent phage therapy failure. Viruses. 16;14(5):1061. doi: 10.3390/v14051061.
6. Azeredo J., **Garcia P.** and Z. Drulis-Kawa. Targeting biofilms using phages and their enzymes. Current Opinion in Biotechnology, 68, 251-261. 2021. https://doi.org/10.1016/j.copbio.2021.02.002.
7. A. C. Duarte, L. Fernández, V. De Maesschalck, D. Gutiérrez, A. B. Campelo, Y. Briers, R. Lavigne, A. Rodríguez and **P. García**. 2021. Synergistic action of phage phiIPLA-RODI and lytic protein CHAPSH3b: a combination strategy to target *Staphylococcus aureus* biofilms. npj Biofilms and Microbiomes 7, 39. 2021. https://doi.org/10.1038/s41522-021-00208-5.
8. L. Fernández, D. Gutiérrez, **P. García**, and A. Rodríguez. 2021. Environmental pH is a key modulator of *Staphylococcus aureus* biofilm development under predation by the virulent phage phiIPLA-RODI. ISME Journal Jan;15(1):245-259. doi: 10.1038/s41396-020-00778-w.
9. Diana Gutiérrez, Lorena Rodriguez-Rubio, Patricia Ruas-Madiedo, Lucía Fernández, Ana Belén Campelo, Yves Briers, Martin Weiss Nielsen, Karl Pedersen, Rob Lavigne, **Pilar García**, Ana Rodríguez. 2021. Design and selection of engineered lytic proteins with *Staphylococcus aureus* decolonizing activity. Frontiers in Microbiology 12:723834. doi: 10.3389/fmicb.2021.723834.
10. Shihan Weng, Abel López, Sara Sáez-Orviz, Ismael Marcet, **Pilar García**, Manuel Rendueles and Mario Díaz. 2021. Effectiveness of bacteriophages incorporated in gelatine films against *Staphylococcus aureus*. Food Control 121: 107666. doi:10.1016/j.foodcont.2020.107666.

C.2. Congress, indicating the modality of their participation (invited conference, oral presentation, poster)

Invited conferences:

1. P. García. Situación de la Terapia Fágica en España. Agencia Española de Medicamentos y Productos Sanitarios. Madrid. 6th June 2019.
2. P. García. Aplicaciones de bacteriófagos y endolisinas en la industria agroalimentaria. Universidad de los Andes, Bogotá, 30th July 2019.
3. P. García. Phage Therapy in Spain. Hospital Universitario 12 de octubre. 17th December 2019. Madrid.
4. P. García. Bacteriophages for controling food pathogens. Jornada de Seguridad Alimentaria, "Visión 360º en Seguridad Alimentaria". AZTI Webinar, 4-5 November 2020.
5. P. García. *Staphylococcus aureus*: Target Pathogen for Phage-based Biocontrol Strategies**.** The 4th Bacteriophage Meeting Nanjing 2020. Nov 11-13, 2020 Nanjing, China.
6. P. García. Bacteriophages: Virus to combat infections. Simposio 1A - Bacteriófagos como herramientas antimicrobianas. XLIII Congreso Chileno de Microbiología 2021. 30th November- 2 December 2021.
7. Pilar García. Biopreservatives based on phages and endolysins. XXII Food Microbiology Meeting-SEM. Jaén, 12-15 September 2022.
8. Seila Agún, Lucía Fernández, Ana Rodríguez, **Pilar García.** *Staphylococcus aureus* biofilms formed in milk display resistance to the phage lytic protein LysRODIΔAmi. ASM Conference on Biofilms, November 13-17, 2022, Charlotte, NC. Poster.
9. Seila Agún, Lucía Fernández, Diana Gutiérrez, Ana Rodríguez, **Pilar García**. Activity of endolysin LysRODI and its derived lysin LysRODIΔAmi against *Staphylococcus aureus* in milk and fresh cheese. Viruses of Microbes. Guimarães, Portugal. 18-22 July, 2022. Poster.
10. Felipe Molina, Manuel Menor-Flores, María Victoria Diaz-Galián, Miguel A. Vega-Rodríguez, Lucía Fernández, **Pilar García**. PhageCocktail: Two Apps and five algoritms for phage cocktail designing. VI Anual Meeting FAGOMA Network. Trujillo (Cáceres) 26-28 October 2022. Oral Comunication.

C.3. Research projects, indicating your personal contribution. In the case of young researchers, indicate lines of research for which they have been responsible.

1. "**Bio-preservatives assessment for valorization of safety and quality of Egyptian white soft cheese".** COOPB22056. CSIC Program for Scientific Cooperation for Development "I-COOP" Call 2022. PI: Pilar García Suárez. (1/1/2023 to 31/12/2024). 20.412,60 €.
2. "Combating antimicrobial resistance using bacteriophages for eco-sustainable agriculture and food systems". Co-operative Research Programme Call for Applications for Event Sponsorship in 2023. Research Programme: Sustainable Agricultural and Food Systems (CRP). PI: Pilar García Suárez. 32.620€.
3. "Biopreservatives based on phage proteins: optimized production for the food industry". PID2019-105311RB-I00. Program Oriented to the Challenges of Society. Ministry of Science and Innovation. 1-6-2020 to 31-5-2023. PI: Pilar García Suárez. 145.000€.
4. Grants for research groups of organisms of the Principality of Asturias. AYUD/2021/52120. Lactic Ferments and Bioconservation-DairySafe Group. 2021-2023. PI: A. Rodríguez. 153.987 €.
5. "Break Biofilms". Innovative Training Networks (ITN) Marie Skłodowska-Curie Actions H2020-MSCA-ITN-2018. Reference 813439. 2019-2022. IP: Carmen Blanco. P. García: research team. 250.000 €.
6. "Spanish Network of Bacteriophages and Transducer Elements III (FAGOMA III)". Coordinator: Pilar García Suárez. Ministry of Science, Innovation and Universities. Ref: RED2018-102589-T. 1/1/2020 to 12/31/2021 (extended to 12/31/2022). 19.000€.
7. "Bacteriophage lysins as alternatives to antimicrobial treatment". Reference BLAAT ID: 67. Partners: 7 EU countries. UE. ERA-NET. 2016-2018. IP: Ana Rodríguez. P. García: research team. 50.000 €.
8. "Bacteriophages and phage proteins: a step forward towards its application in the food industry". AGL2015-65673-R. Ministry of Economy and Competitiveness. 2016- 2018. PI: Pilar García Suárez. 150.000 €.

9. "Spanish Network of Bacteriophages and Transducing elements (Fagoma)". BIO2015-70394-REDT. 1/12/2015 to 30/11/2017. Coordinator: Pilar García Suárez. Ministry of Science, Innovation and Universities. 29.000 €.

10. "Control of mixed *Staphylococcus aureus* biofilms in the food industry through the application of bacteriophages and phage proteins". AGL2012-40194-C02-01. Plan Nacional de I+D+I. Ministerio de Economía y Competitividad. 1-1-2013 to 31-12-2015. IP: Pilar García Suárez. 140.400 €.

C.4. Contracts, technological or transfer merits, Include patents and other industrial or intellectual property activities (contracts, licenses, agreements, etc.) in which you have collaborated. Indicate: a) the order of signature of authors; b) reference; c) title; d) priority countries; e) date; f) Entity and companies that exploit the patent or similar information, if any

1. Contract "1- Metavirome_E and 2- Metavirome_M" Reference 20218215. **Telum Therapeutics S. L**. IP: Ana Rodríguez. Participant: Pilar García. 12/17/2021 to 12/16/2022. 24,200.00€.

2. Contract "Production and purification of three phage endolysins" Reference: 110108220012. **Chemical Ibérica Productos Veterinarios S.L**. IP: Pilar Garcia. 04/20/2022 to 12/19/2022. 12,100€.

3. License Option Agreement CSIC- **Chemical Ibérica Productos Veterinarios S.L**. 07/10/2020.

4. Contract associated with the CDTI Project. "Development of a product against acne based on enzymes". ENDOLISKIN. **CHEMIPOL S.A.** PI IPLA-CSIC: P. García. 5-5-21 to 4-11-23. 178,512.34€.

5. "Isolation of specific bacteriophage(s) from the biotherapeutic strain". 4D PHARMA LEON, S.L.U. Reference: 20182130. 04/13/2018 to 07/12/2018. IP: Ana Rodriguez. P. García research team. 12.000€.

6. "Evaluation of elimination systems for *Listeria monocytogenes* in facilities and products through different strategies (electrolyzed water, phages and biopreservatives). Inactivation of *L. monocytogenes* on surfaces, equipment and cured ham using phages". Interprofessional Association of the Iberian Pig (ASICI) and Interprofessional Association of White Coat Pigs (**INTERPORC**). 2-17-2014 to 8-17-2015. IP: Pilar Garcia Suarez. 30.000€.

7. LYSANDO (Germany). Confidential Title. 23-10-2013 to 23-2-2015. IP: Pilar Garcia Suarez. 25.000€.

8. "Biocontrol of pathogenic microorganisms in food". **Nestec Ltd. (Nestle**). 1-1-2007 to 6-30-2007. IP: Pilar Garcia Suarez. 6.000€.

9. Diana Gutiérrez, Beatriz Martínez, Pilar García, Ana Rodríguez, Lorena Rodríguez-Rubio, and Rob Lavigne. **Chimeric protein with high antimicrobial activity**. Nº de request: EP17382804.7 (28 November 2017). Reference: EP1641.1323. Spain. Institution: CSIC.