

Part A. PERSONAL INFORMATION

CV date 25/05/2026

Name	IRENE GARCÍA FERNÁNDEZ
Open Researcher and Contributor ID (ORCID) (*)	0000-0001-7586-5664

A.1. Current position

Position	Científica Titular CSIC		
Initial date	2023		
Institution	Agencia Estatal Consejo Superior de Investigaciones Científicas		
Department/Center	Instituto de Bioquímica Vegetal y Fotosíntesis		
Country	Spain		
Key words	Plant Molecular Biology, Genetics, Signaling, Immune Response, Hydrogen Cyanide, Post-translational Modifications		

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Graduate in Biology	Sevilla, Spain	1992
PhD in Biological Sciences	Sevilla, Spain	1997

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

I am **Graduate in Biology** since 1992 from the University of Sevilla. In 1993 I obtained a FPU fellowship to do the doctoral thesis under the direction of José Antonio Pintor-Toro (IRNA, CSIC, Sevilla). The **PhD Thesis**, defended in April 1997, was entitled "Isolation and characterization of the chitinase CHIT42 from *Trichoderma harzianum* and analysis of its expression in tobacco plants". As a result of this first period, I am co-author of 8 publications, highlighting the article in Proc Natl Acad Sci USA (1998), with more than 250 citations, in which we describe the use of hydrolytic genes from *Trichoderma* for the control of plant diseases produced by fungi.

In October 1997 I joined the laboratory of Prof. Claudio Scazzocchio at the University of Paris-Sud as a **postdoctoral student**, obtaining several postdoctoral fellowships in competitive competition (Spanish post-doc fellowship from the MEC, Marie Curie from the EU). My research was centered in different aspects of **transcriptional regulation** in the eukaryotic fungus model *Aspergillus nidulans*. As a result of this second period, I am coauthor of 6 publications in books or journals such as Mol Microbiol or Euk Cell, with a high impact index in the field of Microbiology and in which we thoroughly analyzed the role of general and specific transcription factors, activators and repressors, in transcriptional regulation and chromatin organization of a two-way *Aspergillus* promoter. In addition, during that time I supervised several Master and PhD Thesis and I attended several specialized International Conferences.

In May 2003 I joined the group of Drs. Cecilia Gotor and Luis C. Romero at the IBVF (CSIC-Univ. Sevilla), obtaining two successive contracts in **competitive competition**: a Marie Curie Return Grant from the EU and a Return contract from the Junta de Andalucía (regional equivalent to the “Ramón y Cajal” program). In the last decade at the IBVF, my interests have evolved from basic and biotechnological aspects of the plant-pathogen interaction in relation to cysteine towards the **signaling mechanisms** mediated by cysteine and related molecules such as hydrogen cyanide. In this period, I have published 26 publications in books or journals such as Plant Cell, New Phytol or Plant Physiol, in addition to the co-direction of 3 doctoral theses and 6 Master's thesis.

In summary, I am co-author of **48 publications** (39 in ISI journals), I have participated in 25 research projects at regional, national and international level and directed **7 of them as a PI**. In addition, I have participated in numerous national and international conferences and I have the I3P certification by ANEP since 2010. With regard to **students training**, I have codirected 3 PhD Theses, 6 TFMs and 5 TFGs, and I have taught undergraduate and postgraduate at the University of Seville in 2005-12. I have the ANECA certification of Contracted Doctor Professor since 2010. In addition, I coordinate the IBVF **scientific culture commission**. In 2017 I obtained a position of Distinguished Researcher of the CSIC and in 2022 I obtained a position as Tenured Scientist of the CSIC. I also collaborate in gender equality forums and Science inspiration: Ciencia y Tecnología en Femenino, Talent Woman 2018, Ambassador of the Inspiring Girls Foundation since 2018 and got the **award** “Inspiración Niñas Sin Límite en la Ciencia” in 2019. I am **evaluator of Scientific Projects** in Argentina, Uruguay and the Agencia Estatal de Investigación (Spain), as well as **evaluator of Scientific Journals** (JCR) and member of the editorial Board of Frontiers in Plant Sciences (Plant Cell Biology section).

My recent work has shown that besides its toxicity, hydrogen cyanide has a **regulatory function** in root hair development and plant-pathogen response. The elucidation of the **mechanisms** underlying this regulation, including a new post-translational modification of proteins mediated by hydrogen cyanide, and the role of this molecule as a gasotransmitter are the objectives of my current research.

Part C. RELEVANT MERITS

Indicators of the quality of the scientific production

- Number of sexenies: 4
- Total citations: 2736
- Publications in Q1: 32

C.1. Publications (*top 10*)

1. Lucía Arenas-Alfonseca, Masashi Yamada, Luis C. Romero, and **Irene García[#] (#: corresponding author)**. New insights on the role of HCN in root hair elongation through single cell proteomics. Plants (Basel), 12(23): 4055 (2023). **Q1** Plant Sciences.
2. Díaz-Rueda, P., Morales De Los Ríos, L., Romero, L.C., **García, I.[#] (#: corresponding author)**. Old poisons, new signaling molecules: the case of hydrogen cyanide. J. Exp. Bot. 74(19): 6040–6051 (2023) **Q1** Plant Sciences.
3. Arenas-Alfonseca, L; Gotor, C.; Romero, L.C. and **García, I.[#] (#: corresponding author)**. Arabidopsis β -cyanoalanine synthase mutation overcomes NADPH oxidase action in response to pathogens. J. Exp. Bot. 72:4535-4547 (2021). **Q1** Plant Sciences

4. **García I**, Arenas-Alfonseca L, Moreno I, Gotor C, Romero LC. HCN regulates cellular processes through posttranslational modification of proteins by S-cyanylation. *Plant Physiol* 179: 107-123 (2019).
5. Lucía Arenas-Alfonseca, Cecilia Gotor, Luis C. Romero and **Irene García[#] (#: corresponding author)**. β -Cyanoalanine synthase action in root hair elongation is exerted at early steps of the root hair elongation pathway and is independent on direct cyanide inactivation of NADPH oxidase hair elongation in Arabidopsis. *Plant Cell Physiol.*, 59:1072-1083 (2018).
6. **Irene García[#]**, Tábata Rosas, Eduardo R. Bejarano, Cecilia Gotor and Luis C. Romero (**#: corresponding author**). Transient transcriptional regulation of the *CYS-C1* gene and cyanide accumulation upon pathogen infection in the plant immune response. *Plant Physiology*, 162: 2015-27 (2013).
7. Álvarez, C., Bermúdez, M. A., Romero, L.C., Gotor, C. and **García, I[#]**. (**#: corresponding author**). Cysteine Homeostasis Plays an Essential Role in Plant Immunity. *New Phytologist* 193:165-177 (2012)
8. Consolación Álvarez, **Irene García**, Inmaculada Moreno, Esther Pérez-Pérez, José L. Crespo, Luis C. Romero and Cecilia Gotor. Cysteine-generated sulfide in the cytosol negatively regulates autophagy and modulates the transcriptional profile in Arabidopsis. *The Plant Cell*, 24: 4621-4634 (2012)
9. **Irene García**, Blanca Vioque, José M^a Castellano, Roberto Solano, Cecilia Gotor and Luis C. Romero. Mitochondrial β -cyanoalanine synthase is essential for root hair formation in Arabidopsis thaliana. *The Plant Cell* 22:3268-3279 (2010)
10. Lorito, M.*, Woo, S.L.*, **García, I.***, Colucci, G., Harman, G., Pintor-Toro, J.A., Fillipone, E., Muccifora, S., Lawrence, C.B., Zoina, A. and Scala, F (*: coauthors). Genes from a mycoparasitic fungi as a source for improving plant resistance to fungal pathogens. *Proc. Natl Acad. Sci. USA* 95:7860-7865 (1998)

C.2. Congress

- Chair of the organization of the XVI Reunión de Biología Molecular de Plantas, Sevilla, 2022.
- 6 participations in the scientific/organizing committees.
- 13 oral participations in national and international congresses.

C.3. Research projects (10 selected)

1. PID2024-162031OB-I00. Aplicaciones del cianuro como estimulante de la resiliencia y la sostenibilidad en cultivos (CERES). Financing entity: Agencia Estatal de Investigación del Ministerio de Ciencia, Innovación y Universidades. 2025-2028. 187.500 €. **IP1: Irene García**; IP2: Luis C. Romero. Participation as a PI.
2. PID2021-127450NB-I00. Análisis funcional de la S-cianilación de proteínas mediada por cianuro en la respuesta adaptativa de las plantas frente a patógenos. Financing entity: Agencia Estatal de Investigación del Ministerio de Ciencia e Innovación (2021). 2022-2025. 133.100 €. **IP1: Irene García**; IP2: Luis C. Romero. Participation as a PI.
3. P20_00030. "Análisis de la función del cianuro en la interacción planta-microorganismo" **IP: Irene García**. Financing entity: Consejería de Economía, Innovación y Ciencia de la Junta de Andalucía, 2021-2022. 110.000 €. Participation as a PI.
4. EPIC-XS project 389. "Proteomics of plant-microorganism interactions in the light of HCN-driven modifications. **IP: Irene García**. Financing entity: EPIC-XS European Consortium. Participation as a PI.

5. FGCCLC-2021-0025. "Tik Tok Science: Irene's lab". **IP: Irene García**. Financing Entity: Fundación general CSIC. (2020-2021). 1.900 €. Participation as a PI.
6. Intramural project CSIC Ref#201840I085. "Análisis de la función del cianuro como señal molecular en *Arabidopsis thaliana*" Financing Entity: CSIC (2018-2019). **IP: Irene García**. 5.000 €. Participation as a PI.
7. BIO2016- 76633-P. "Señalización intracelular en plantas mediada por sulfuro y cianuro" IPs: Cecilia Gotor y Luis C. Romero (IBVF, Universidad de Sevilla-CSIC). Financing Entity: Agencia Estatal del Ministerio de Economía, Industria y Competitividad. (2017-2019). 248.050 €. Participation as a researcher.
8. BIO2013-44648. "Señalización intracelular en plantas mediada por cisteína y otras moléculas relacionadas". IPs: Cecilia Gotor y Luis C. Romero (IBVF, Universidad de Sevilla-CSIC). Dirección General de Proyectos de Investigación del Ministerio de Economía y Competitividad. (2014-2016). 242.000 €. Participation as a researcher.
9. CONSOLIDER-INGENIO CSD2007-00057. "Functional and Biotechnological Potential of Transcription Factors in Plants (TRANSPLANTA)". IP: Javier Paz-Ares (CNB-CSIC). Financing entity: Ministerio de Ciencia e Innovación, 2009-2013. 5.188.000,00 €. Participation as a researcher.
10. HI2006-0076. "Metal-ion adsorption by fungal biomaterial as a tool for soil and wastewater depollution". **IPs: Irene García / S. Olga Cacciola** Financing entity: Programa de acciones integradas hispano-italianas del Ministerio de Educación y Ciencia (Ciencia y Tecnología), 2007-2009. Participation as a PI.