

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	FERNANDO NICOLÁS		
Family name	DE LA TORRE FAZIO		
Gender (*)		Birth date (dd/mm/yyyy)	
Social Security, Passport, ID number	DNI:		
e-mail		URL Web	
Open Researcher and Contributor ID (ORCID) (*)			

(*) Mandatory

A.1. Current position

Position	PROFESOR TITULAR DE UNIVERSIDAD		
Initial date	14/04/2020		
Institution	UNIVERSIDAD DE MÁLAGA		
Department/Center	BIOLOGÍA MOLECULAR Y BIOQUÍMICA-FACULTAD DE CIENCIAS		
Country	SPAIN	Teleph. number	
Key words	BIOQUÍMICA-BIOLOGÍA MOLECULAR-PLANTAS-METABOLISMO-REGULACIÓN-AMINOÁCIDOS		

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

Period	Position/Institution/Country/Interruption cause
01/2002-08/2006 (56 months)	PhD student Universidad de Málaga-Spain
09/2006-05/2010 (45 months)	Postdoctoral IBVF-CSIC-Spain Juan de la Cierva
05/2010-12/2012 (31 months)	Postdoctoral Universidad de Málaga-Spain
01/2013-09/2016 (45 months)	Postdoctoral Universidad de Málaga-Spain
10/2016-03/2020 (42 months)	Profesor sustituto interino Universidad de Málaga-Spain
04/2020-01/2025 (57 months)	Profesor Titular- Universidad de Málaga-Spain

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Graduate in biological sciences	Universidad de Málaga-Spain	2000
PhD in Biochemistry	Universidad de Málaga-Spain	2006

(Include all the necessary rows)

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

During the last 10 years, my teaching and research activity has taken place mainly in the Department of Molecular Biology and Biochemistry of the University of Malaga (UMA). During this period, the positions held have been: (1) postdoctoral researcher from January 2015 to November 2016; (2) Interim Professor from November 2016 to February 2020 and (3) Associate Professor from March 2020 to the present. During this period, I have participated in the research projects and publications described in this CVA. Regarding teaching, I have given >2500 hours of theoretical and practical teaching at undergraduate and master's level. The research that I have led in this period is described

in the publications included in this CVA and has mainly addressed the biosynthesis of aromatic amino acids and derived compounds in plants. The most notable merits of these research include the characterization of essential enzymatic activities of these pathways such as aspartate aminotransferase, prephenate aminotransferase, arogenate dehydratase or chorismate mutase. These studies have also allowed the characterization of important regulatory processes at the transcriptional and metabolic level of the pathway that represent contributions of enormous interest in this topic and are the basis for the proposal presented here. Currently my international collaborations, and of relevance to the present proposal, include the laboratories led by Professor Katherine Warpeha (University of Illinois-US), Hiroshi Maeda (University of Wisconsin, Madison-US) and Hitoshi Onouchi (University of Hokkaido-Japan). I am currently involved in the set-up of a COST (European Cooperation in Science and Technology) network proposal focused on improving the production of aromatic compounds in plants (flavonoids and monolignols). Since 2021 I'm PI of a Ministry of Science and Innovation project PID2021-128168NB-100 addressing the regulation of the synthesis of phenylalanine in plants. My research has also allowed me to participate in the direction of advanced research projects: a doctoral thesis defended in 2017 and another in 2022, as well as in multiple degree and master's projects. I am currently supervising a PhD thesis and a master's thesis.

Other notable merits include my active participation as a reviewer of scientific publications in leading journals in the field of "Plant Science" (Trends in Plant Science, Sci Reports, Journal of Experimental Botany, New Phytologist, etc.), my activity in the evaluation of research projects, attendance at multiple national and international conferences, membership in selection committees for university professors (University of Illinois, Chicago) or being editor of special issues in journal such as Frontiers in Plant Science or Plants. My general research quality indexes in Researcher ID (H-5206-2015) are 1028 citations and H-index=17, in Google Scholar 1507 citations and H-index=21. I am the corresponding author of multiple papers (see publications).

Part C. RELEVANT MERITS (sorted by typology)

C.1. Publications (10 years)

de la Torre F, Medina-Morales B, Blanca-Reyes I, Pascual MB, Ávila C, Cánovas FM, Castro-Rodríguez V. (2024) Properties and Functional Analysis of Two Chorismate Mutases from Maritime Pine. *Cells*. 13(11):929. doi: 10.3390/cells13110929. **Corresponding author**

El-Azaz J, Cánovas FM, Barcelona B, Ávila C, **de la Torre F**. (2022) Deregulation of phenylalanine biosynthesis evolved with the emergence of vascular plants. *Plant Physiol*. 188(1):134-150. doi: 10.1093/plphys/kiab454. **Corresponding author**

Urbano-Gámez JA, El-Azaz J, Ávila C, **de la Torre FN**, Cánovas FM. (2020) Enzymes Involved in the Biosynthesis of Arginine from Ornithine in Maritime Pine (*Pinus pinaster* Ait.). *Plants* 9(10):1271. doi: 10.3390/plants9101271. **Corresponding author**

Llebrés MT, Pascual MB, Valle C, **de la Torre FN**, Valderrama-Martin JM, Gómez L, Avila C, Cánovas FM. (2020) Structural and Functional Characteristics of Two Molecular Variants of the Nitrogen Sensor PII in Maritime Pine. *Front Plant Sci*. 11:823. doi: 10.3389/fpls.2020.00823.

El-Azaz J, **de la Torre F**, Pascual MB, Debille S, Canlet F, Harvengt L, Trontin JF, Ávila C, Cánovas FM. (2020) Transcriptional analysis of arogenate dehydratase genes identifies a link between phenylalanine biosynthesis and lignin biosynthesis. *J Exp Bot*. 71(10):3080-3093. doi: 10.1093/jxb/eraa099. **Corresponding author**

El-Azaz J, Cánovas FM, Ávila C, **de la Torre F**. (2018) The Arogenate Dehydratase ADT2 is Essential for Seed Development in Arabidopsis. *Plant Cell Physiol.* 59(12):2409-2420. doi: 10.1093/pcp/pcy200.

Corresponding author

Martínez-Cruz J, Romero D, **de la Torre FN**, Fernández-Ortuño D, Torés JA, de Vicente A, Pérez-García A. (2018) The Functional Characterization of Podosphaera xanthii Candidate Effector Genes Reveals Novel Target Functions for Fungal Pathogenicity. *Mol Plant Microbe Interact.* 31(9):914-931. doi: 10.1094/MPMI-12-17-0318-R.

Cánovas FM, Cañas RA, **de la Torre FN**, Pascual MB, Castro-Rodríguez V, Avila C. (2018) Nitrogen Metabolism and Biomass Production in Forest Trees. *Front Plant Sci.* 28;9:1449. doi: 10.3389/fpls.2018.01449.

Gutiérrez-Beltrán E, Personat JM, **de la Torre F**, Del Pozo O. (2017) A Universal Stress Protein Involved in Oxidative Stress Is a Phosphorylation Target for Protein Kinase CIPK6. *Plant Physiol.* 173(1):836-852. doi: 10.1104/pp.16.00949.

Castro-Rodríguez V, Cañas RA, **de la Torre FN**, Pascual MB, Avila C, Cánovas FM. (2017) Molecular fundamentals of nitrogen uptake and transport in trees. *J Exp Bot.* 68(10):2489-2500. doi: 10.1093/jxb/erx037.

Van Kerckhoven SH, **de la Torre FN**, Cañas RA, Avila C, Cantón FR, Cánovas FM. (2017) Characterization of Three L-Asparaginases from Maritime Pine (Pinus pinaster Ait.). *Front Plant Sci.* 23;8:1075. doi: 10.3389/fpls.2017.01075.

Pascual MB, El-Azaz J, **de la Torre FN**, Cañas RA, Avila C, Cánovas FM. (2016) Biosynthesis and Metabolic Fate of Phenylalanine in Conifers. *Front Plant Sci.* 13;7:1030. doi: 10.3389/fpls.2016.01030.

El-Azaz J, **de la Torre F**, Ávila C, Cánovas FM. (2016) Identification of a small protein domain present in all plant lineages that confers high prephenate dehydratase activity. *Plant J.* 87(2):215-29. doi: 10.1111/tpj.13195. **Corresponding author**

de la Torre F, El-Azaz J, Avila C, Cánovas FM. (2014) Deciphering the role of aspartate and prephenate aminotransferase activities in plastid nitrogen metabolism. *Plant Physiol.* 164(1):92-104. doi: 10.1104/pp.113.232462.

de la Torre F, Cañas RA, Pascual MB, Avila C, Cánovas FM. (2014) Plastidic aspartate aminotransferases and the biosynthesis of essential amino acids in plants. *J Exp Bot.* 2014 Oct;65(19):5527-34. doi: 10.1093/jxb/eru240. Epub 2014 Jun 5.

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

Posttranslational regulation of aromatic amino acids biosynthesis in plants. Póster. Pascual MB, Rivas E, **de la Torre F**. XVII Plant Molecular Biology Meeting. Universitat Jaume I of Castellón (Spain), July 3-5, 2024.

Posttranslational regulation of phenylalanine synthesis (P_{Ro}PheSy), Póster. Rivas E, Pascual MB, **de la Torre F**. 27 th European nitrogen cycle meeting & XVI Reunión nacional del metabolismo del nitrógeno (Nitrogen2024). Granada (Spain) October 1-4, 2024.

«Phylobiochemical analysis of Phe biosynthesis in plants» Invited conference. **F de la Torre** and J El-Azaz. 44Th meeting of the Spanish Society of Biochemistry and Molecular Biology. Málaga (Spain), September 2022.

“New insights into the regulation of phenylalanine biosynthesis in plants” Oral presentation. **F de la Torre**. XVII Spanish-Portuguese Congress of Plant Biology and XXIV Meeting of the Spanish Society of Plant Biology. On line. July 2021.

Maritime pine PpMYB8 directly co-regulates secondary cell wall architecture and the associated Phe-biosynthesis pathway. Poster. **F de la Torre**; J El-Azaz; MB Pascual; JF Trontin; S Debille; F Canlet; C Ávila; FM Cánovas. Plant Biology 2018 (AMERICAN SOCIETY OF PLANT BIOLOGISTS) Montreal-Canada July 2018.

The arogenate dehydratase ADT2 is essential for seed development in Arabidopsis. Poster. J El-Azaz; FM Cánovas; C Ávila; **F de la Torre**. Plant Biology 2018 (AMERICAN SOCIETY OF PLANT BIOLOGISTS) Montreal-Canada July 2018.

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. Project title: Posttranslational Regulation of Phenylalanine Synthesis in Plants

(PRoPheSy) (PID2021-128168NB-100)

Affiliation entity: Universidad de Málaga

PIs: Dra.M. Belén Pascual and Dr. Fernando de la Torre

Funding entity: Spanish Ministry of Science and Innovation

Start date-End date: 01/09/2022 to 31/08/2025

Amount: 90.000 €

2. Project title: “Ayudas para Proyectos Puente en la Universidad de Málaga (PP1UMA-B4)

Affiliation entity: Universidad de Málaga

PIs: Dra.M. Belén Pascual and Dr. Fernando de la Torre

Funding entity: Universidad de Málaga

Start date-End date: 01/12/2021 to 30/11/2022

Amount: 8.000 €

3. Project title: Molecular regulation of the biosynthesis and transport of essential amino

acids in maritime pine (TransAminoPine) (RTI2018-094041-B-I00)

Affiliation entity: Universidad de Málaga

PI: Prof. Francisco M. Cánovas

Degree of contribution: Researcher

Funding entity: Spanish Ministry of Science, Innovation and University

Start date-End date: 01/01/2019 - 31/12/2021

Amount: 205.700 €

4. Project title: Biosíntesis de aminoácidos y economía del nitrógeno en plantas de interés forestal (BIO2015-69285-R)

Affiliation entity: Universidad de Málaga

PIs: Prof. Francisco Cánovas and Prof. Concepción Ávila

Funding entity: Spanish Ministry of Economy and Competitiveness

Degree of contribution: Researcher

Start date-End date: 01/01/2016 - 31/12/2018

Amount: 187.550 €

5. Project title: Genómica y Biotecnología del metabolismo del nitrógeno en coníferas (NitroGenoFor) (BIO2012-33797)

Affiliation entity: Universidad de Málaga

PI: Prof. Francisco Cánovas

Funding entity: Spanish Ministry of Economy and Competitiveness

Degree of contribution: Researcher

Period: 01/01/2013 – 31/12/2015

Amount: 110.000 €