MINISTERIO DE CIENCIA E INNOVACIÓN

Cofinanciado por la Unión Europea

AGENCIA ESTATAL DE INVESTIGACIÓN

CURRICULUM VITAE (CVA)

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

CV date	5/10/2022

Part A. PERSONAL INFORMATION

First name	Lorenzo		
Family name	Burgos Ortiz		
Gender (*)	Men	Birth date (dd/mm/yyyy)	21/11/1962
Social Security, Passport, ID number			22.945.056A
e-mail	burgos@cebas.csic.es	URL Web http://www.cebas.csic.es/dep_spain/mejora/biotecnologia/biotec_lineas.html	
Open Researcher and Contributor ID (ORCID) (*)		0000-0003-2399-8232	

(*) Mandatory

A.1. Current position

Position	Profesor de Investigación		
Initial date	2008		
Institution	Consejo Superior de Investigaciones Científicas (CSIC)		
Department/Center	Fruit Breeding. Biotechnology group	Centro de Edafología y Biología Aplicada del Segura (CEBAS)	
Country	Spain	Teleph. number	968396200 Ext. 445317
Key words	breeding, fruit trees, genetic engineering, in vitro culture, biotechnology		

A.2. Previous positions (research activity interuptions, art. 14.2.b))

Period	Position/Institution/Country/Interruption cause
12/1993-5/2005	Científico Titular/CEBAS-CSIC/Spain
5/2005-7/2008	Investigador/CEBAS-CSIC/Spain

A.3. Education

PhD, Licensed, Graduate	University	Year
Graduated in Biology	University of Murcia	1987
PhD in Biology	University of Murcia	1991

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

The work for my Ph.D. thesis started in January 1988 with the financial support of a fellowship from the Spanish Ministry of Education and Science. The thesis was defended in June 1991 obtaining the maximum possible qualification. During this period I got expertise in **apricot breeding**.

My post-doctoral research started at the *Horticultural Crops Research Laboratory*, Fresno (California) with a **Fulbright fellowship** and there my expertise in the **breeding of fruit trees** was completed. I carried out **inheritance studies** of important traits such as male sterility or sexual compatibility in apricot or seedlessness in grape. I also started learning and developing techniques for *in vitro* embryo rescue in *Prunus* and *Vitis*.

After applying for a **permanent position at CSIC**, I went back to my original Department and continued working in the **breeding of fruit trees**, particularly apricot and peaches. I also

assumed the responsibility of developing new biotechnological techniques in a Department that had never before faced such type of methodologies.
More than 20 years ago, trying to transform cultivars from a *Prunus* species was beyond the state of the art since only seed-derived tissues had been transformed from few *Prunus* species. Moreover, as a breeder I have always looked for **a genotype-independent transformation methodology** that allows using genetic engineering as a tool to improve apricots. Our group has developed the protocols to transform apricots that, although with low efficiency, are the only ones currently available. Also, Dr. César Petri, one of my Ph.D. students, greatly improved transformation protocols for European plum during his post-doc using basically the expertise he got while working with us.
The interest of the work that we are developing and my perseverance in conforming **a biotechnology group** within the Department have conducted to a young group of hard-working and very motivated people that I am leading.
Seven postgraduate students have developed their Ph.D. thesis under my supervision. One of them, Dr. Nuria Alburquerque, is today part of the group after getting a permanent position. Dr. Olaya Pérez-Tornero was the R+D Director of a private company and, currently, has a permanent position at IMIDA, another research institute in Murcia. Dr. César Petri got also a permanent position at a different CSIC institute after a three-year post-doc appointment at Dr. Scorza's lab in West Virginia and a Ramon & Cajal post-doc appointment at the University of Cartagena. Other Ph.D. students supervised by me went back to their countries where they are working in research institutes or at the University. Therefore, **most of my former students are pursuing a successful research career**.
An indication of the impact of the work we are developing was the incorporation of two excellent postdoctoral researchers, Dr. Mohamed Faize and Dr. Isabel M. Gónzalez-Padilla, to our group coming from other different groups and contributing with new points of views and expertise. These post-docs are now under permanent positions in other Research Institutes/Universities.
I have established international relationships with other researchers throughout my participation in two COST projects. As a result, we are now planning a join experiment where we will plant in Italy several plum and apricot lines resistant to plum pox virus (sharka) which were produced in our laboratory and have been evaluated in vitro and in the greenhouse.
More than 120 papers in international peer-reviewed journals since 1996 prove a **high productivity**. However, I have also maintained frequent relationships with private companies and for more than 9 years, I leaded an EUREKA research project financed by Vitrotech, a private company, as well as a PETRI project later in collaboration with this company. I also conducted a peach breeding program, during more than 10 years, completely financed by the companies "La Tiesa" and "Selecciones Doña Ana" to produce early maturing peaches in Seville. Two new peach cultivars were released by the company. We have established many different contracts with companies that looked for our advice or expertise in different subjects generally related to biotechnological approaches.
Within my responsibilities, as a scientist working for CSIC, are the **evaluation of projects** like this, or **scientific papers**, what I do on a regular basis, as well as the **participation in tribunals** either for new "Cientificos Titulares" incorporation or for promotion. I have presided two tribunals for new positions at CSIC and other for promotion to "Investigador Científico".
My Scientific Leadership is demonstrated by the new group conformed within the Plant Breeding Department under my supervision. Since 2008, this new group is carrying biotechnology-approached breeding of fruit trees by using or developing many different techniques.

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

C.1. Publications *(see instructions)*

1 Alburquerque, N.; Petri, C.; Faize, L.; Burgos, L. (2012) A short-length single chimeric transgene induces simultaneous silencing of *Agrobacterium tumefaciens* oncogenes and resistance to crown gall. *Plant Pathology* 61: 1073-1081

2 Faize, M.; Burgos, L.; Faize, L.; Petri, C., Barba-Espín, G.; Díaz-Vivancos, P; Clemente-Moreno, M.J.; Alburquerque, N.; Hernández, J.A. (2012) Modulation of tobacco bacterial disease resistance using cytosolic ascorbate peroxidase and Cu,Zn-superoxide dismutase. *Plant Pathology* 61(5): 858-866 (Doi: 10.1111/j.1365-3059.2011.02570.x)

3 Faize M.; Faize L.; Petri C.; Barba-Espin G.; Díaz-Vivancos P.; Clemente-Moreno M.J.; Koussa T.; Rifai L.A.; Burgos L.; Hernandez J.A. (2013) Cu/Zn superoxide dismutase and ascorbate peroxidase enhance *in vitro* shoot multiplication in transgenic plum. *Journal of Plant Physiology*, 170: 625-632.

4 Díaz-Vivancos P.; Faize M.; Barba-Espin G.; Faize L.; Petri C.; Hernandez J.A.; Burgos L. (2013) Ectopic expression of cytosolic superoxide dismutase and ascorbate peroxidase leads to salt stress tolerance in transgenic plums *Plant Biotechnology Journal* 11: 976–985

5 García-Almódovar, C.; Clemente, M.J.; Díaz-Vivancos, P.; Petri, C.; Rubio, M.; Padilla, I.M.G.; Ilardi, V.; Burgos, L. (2015) Greenhouse evaluation confirms in vitro sharka resistance of genetically engineered h-UTR/P1 plum plants. *Plant Cell, Tissue and Organ Culture* 120: 791-796.

6 Faize, M.; Nicolás, E.; Faize, L.; Diaz-Vivancos, P.; Burgos, L.; Hernández, J.A. (2015) Cytosolic ascorbate peroxidase and Cu, Zn-superoxide dismutase improve seed germination, plant growth, nutrient uptake and drought tolerance in tobacco. *Theoretical and Experimental Plant Physiology* 27: 215-226 (DOI: 10.1007/s40626-015-0046-2).

7 Alburquerque N, Faize L, Burgos L. (2017) Silencing of *Agrobacterium tumefaciens* oncogenes *ipt* and *iaaM* induces resistance to crown gall disease in plum but not in apricot. *Pest Management Science* 73; 2163-2173.

8 Chu, M.Y.; Pedreño, M. A.; Alburquerque, N.; Faize, L.; Burgos, L.; Almagro, L. A new strategy to enhance the biosynthesis of trans-resveratrol by overexpressing stilbene synthase gene in elicited Vitis vinifera cell cultures (2017) *Plant Physiology and Biochemistry* 113: 141-148.

9 Faize M, Faize L, Alburquerque N, Venisse JS, Burgos L. Hydrogen peroxide generated by over-expression of cytosolic superoxide dismutase in transgenic plums enhances bacterial canker resistance and modulates plant defense responses *Molecular Biology Reports* (2020) DOI: 10.1007/s11033-020-05660-8

10 Pérez-Caselles, C.; Alburquerque, N.; Faize, L.; Bogdanchikova, N.; García-Ramos, J.C.; Rodríguez-Hernández, A.G.; Pestryakov, A.; Burgos, L. How to get more silver? Culture media adjustment targeting surge of silver nanoparticle penetration in apricot tissue during in vitro micropropagation. *Horticulturae (*2022), 8, 855.
https://doi.org/10.3390/horticulturae8100855

C.2. Congress

I have been author of forty eight and forty three communications to international and national symposiums, respectively, invited speaker in three of the international and two of the national symposiums. Member of the scientific committee in one international and one national symposiums. Chairman in two national symposiums. President of the Organizing Committee of one national symposium. Some of the most relevant are listed below.

1. Invited to open Biology section. Burgos, L. y Pérez-Tornero, O. Review of incompatibility in apricot, XIth International Symposium on Apricot Culture. 25-31 May, 1997, Thessaloniki (Grecia).
2. Invited lecture. Burgos, L. Technical aspects of the “embryo rescue” in *Prunus*, Characterization of genetic resources of temperate fruit zone for tropics and subtropics. Junio 6-7, 2002, Valencia (Spain).
3. Member of the Symposium Scientific and Editorial Committee. Poster: Petri, C; López-Noguera, S.; Alburquerque, N. y Burgos, L. Efficient Transformation of Commercial Apricot Cultivars and Regeneration of Transformed Plants, International Symposium on Biotechnology of Temperate Fruit Crops and Tropical Species. October 10-14, 2005. Daytona, Florida (EEUU).
4. Member of the Symposium Scientific and Editorial Committee. Poster: López-Noguera, S.; Petri, C. and Burgos, L. Using MAT vector system to produce marker-free transformed apricot plants, International Symposium on Biotechnology of Temperate Fruit Crops and Tropical Species. October 10-14, 2005. Daytona, Florida (EEUU).
4. Invited chairman of Regeneration Session. Poster: González-Padilla, I.M.; Burgos, L. and Piqueras. A., Encapsulación de secciones nodales de albaricoquero (*Prunus armeniaca* L.) y neem (*Azadirachta indica* A. Juss), VII Reunión de la S.E.C.I.V.T.V. June 2007 Alcalá de Henares (Spain).
5. Chairman of Regeneration Session. Poster: Alburquerque, N.; Wang H. and Burgos, L. Desarrollo de una estrategia de selección con manosa para obtener plantas transformadas de albaricoquero, VII Reunión de la S.E.C.I.V.T.V. June 2007 Alcalá de Henares (Spain).
6. Invited chairman of Scientific Session III Transformation and Bioindustries XII Alburquerque, N.; Díaz-Vivancos, P.; Faize, L.; Hernández, J.A. y Burgos, L. Preliminary

results on rootstock-to-scion transfer of transgene-derived small interfering RNAs and their effect on sharka resistance in non-transgenic fruit trees, Congreso Nacional de la Sociedad Española de Cultivo In Vitro de Tejidos Vegetales, September 13-15, 2017 Madrid (Spain)

C.3. Research projects

1 Desarrollo de un vector combinando el gen marcador condicional dao1 (que permite selección positiva y negativa) con una construcción *Cre-LoxP* para producir plantas transgénicas libres de marcadores (Project 08665/PI/08) 2009-2011Fundación Séneca. IP Dr. César Petri. Budget: 52.200 €

2 Mejora de la tolerancia a sequía en albaricoquero incrementando su capacidad antioxidante mediante sobre-expresión de superoxido dismutasa y ascorbato peroxidasa (BFU2009-07443) 2010-2012. Comisión Interministerial de ciencia y tecnología. IP Dr. José Antonio Hernández Cortés. Budget: 169.400 €

3 Silenciamiento de oncogenes de Agrobacterium tumefaciens para inducir resistencia a la enfermedad de la agalla de corona en Prunus (AGL2010-20270) 2011-2013. Comisión Interministerial de ciencia y tecnología. IP: Dra. Nuria Alburquerque Ferrando. Budget: 84.700 €

4 Estudio de nuevos mecanismos y estrategias para introducción de resistencia a la sharka (RTA2013-00026-C03-00) 2014-2017 INIA Proyecto coordinado. Subproyecto nº2 en CEBAS (CSIC). IP: Dr. Lorenzo Burgos Ortiz. Budget: 150.000 €

5 Desarrollo de estrategias para introducir resistencia al virus de la sharka y estudio de los mecanismos moleculares y bioquímicos de la dormancia en Prunus. (RTA2017-00011-C03-02) 2017-2020 INIA Proyecto coordinado. Subproyecto nº2 en CEBAS (CSIC). IP: Dr. Lorenzo Burgos Ortiz. Budget: 125.022 €.

6 "Biotechnological strategies for the production of pathogen-free fruit plants" within the project CARM-Agroalimentario Ref.: CA20565 "OSIRIS" (BORM, Decreto 301/2021, December 29, 2021). Budget: 100.000 €

C4. Contracts, technological or transfer merits

1 Desarrollo de variedad comercializable de Jatrofa (*Jatropha curcas*, L.). Obtención de variedades productivas y con alto rendimiento en aceite de Jatrofa (2012-2015). SFS BIOTECPRO S.L. IP: Dr. Nuria Alburquerque. Presupuesto: 194.213€

2 Mantenimiento in vitro de un banco de germoplasma de nogal (2009-2013). Biovitrum, S.L. IP: Dr. Lorenzo Burgos. Presupuesto: 17.200€

3 Introducción y establecimiento in vitro de variedades de vid (2014-2015). SNFL Mediterraneo. IP: Dr. Lorenzo Burgos. Presupuesto: 6.173€

4 Mantenimiento in vitro de un banco de germoplasma de Petunia transgénica (2017-2021). Barberet & Blanc. IP: Dr. Lorenzo BurgosPresupuesto: 9.600€

Patents:

1 Alburquerque, N.; Wang H.; Nortes, M.D.; López-Noguera, S.; Petri, C.; Pérez-Tornero, O.; Piqueras, A., Burgos, L. Procedimiento para modificar genéticamente plantas leñosas mediante la utilización de células con capacidad meristemática. PCT /ES2008/070139 (CSIC, Spain)

2 Truniger, V.; Gosalvez, B.; Burgos, L.; Rodriguez Hernández A.M.; Aranda M.A. Polinucleóticos y su uso para obtener plantas resistentes a múltiples virus, incluyendo el virus del amarilleo de las venas del pepino (CVYV), el virus marroquí del mosaico de la sandía (MWMV), el virus de las manchas necróticas del melón (MNSV) y el virus del mosaico amarillo del calabacín (ZYMV) PCT/ES2011/070368 (CSIC, Spain)