

CURRICULUM VITAE ABREVIADO (CVA)

Part A. PERSONAL INFORMATION

First name	David		
Family name	Gonzalez Ballester		
Gender (*)	M	Birth date	03/01/1975
ID number	30826223J		
e-mail	Q62gobad@uco.es	URL Web	
Open Researcher and Contributor ID (ORCID) (*)	0000-0003-0024-1886		

(*) *Mandatory*

A.1. Current position

Position	Profesor Titular de Universidad		
Initial date	2019		
Institution	Universidad de Córdoba (UCO)		
Department/Center	Bioquímica y Biología Molecular	Facultad de Ciencias	
Country	Spain	Teleph. number	957218352
Key words	Hydrogen, algae, biotechnology, bacteria, wastewaters, biomass		

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

Period	Position/Institution/Country/Interruption cause
2019-	Profesor Titular /UCO/ Spain/ birth child in 2020
2018 - 2019	Profesor Contratado Doctor / UCO/Spain
2012 - 2018	Ramón y Cajal posdoc / UCO/Spain/birth child in 2016
2011 - 2011	Postdoc / UCO/Spain
2010 - 2011	Marie Curie Postdoc/ UCO/Spain
2009 - 2010	Postdoc / Carnegie Institution of Science/USA
2007 - 2009	Marie Curie Postdoc / Carnegie Institution of Science/USA
2006 - 2007	MEC-Fulbright Postoc / Carnegie Institution of Science/USA
2006 - 2006	Postdoc / Carnegie Institution of Science/USA
2005 - 2006	Postdoc / UCO/Spain
2001 - 2005	FPDI-Junta Andalucía Predoc Fellowship / UCO/Spain

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Doctor en Ciencias	UCO/Spain	2005
Licenciado en Bioquímica	UCO/Spain	1998

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

Awarded with a predoctoral fellowship (Andalusian F.P.D.I program). PhD degree (UCO, 2000-2005) supervised by Emilio Fernandez and focussed on the study of the ammonium transporter genes in *Chlamydomonas* and in the regulatory mechanisms that govern nitrogen in this alga. Published results included: a) first time description of the ammonium transporter genes in *Chlamydomonas*; b) identification of nitrogen sensing regulatory elements; c) A high-throughput screening for nitrogen sensing mutants in *Chlamydomonas*, and d) A novel molecular technique to identify marker gene insertion within a genome (*Plant Mol Biol*, 2004; *Trends Biotechnol*, 2004; *Plant Physiol*, 2005; *Anal Biochem*, 2005; *Plant Cell*, 2007; *Eukaryotic Cell*, 2007).

On 2006 I moved to Carnegie Institution of Science at Stanford University (USA) under the supervision of Prof. Arthur Grossman. Employed by the Carnegie Institution, and later on awarded with postdoctoral contracts from MEC and Marie Curie. My postdoctoral work focused mainly on the study of the acclimation responses to sulfur deprivation, and its regulation, in *Chlamydomonas*. Among other results the published works described: a) the identification of novel regulatory genes for sulfur assimilation; b) the first report ever done about the RNA-seq technique in *Chlamydomonas*; c) tools for mutagenesis, reverse and forward genetics in *Chlamydomonas*; d) sulfate transporters in *Chlamydomonas*; and e) phosphorous deprivation responses in *Chlamydomonas* (*Plant Physiol*, 2008, *Genetics*, 2009; *Plant Cell*, 2010, *Plant Physiol*, 2010; *Plant Methods*, 2011). During my period at Stanford University, I



interacted with many prominent Chlamydomonas researchers and with the U.S. Department of Energy Joint Genome Institute that was in charge of the Chlamydomonas sequencing project. As result, I participated in the publication describing the Chlamydomonas genome (*Science*, 2010). Furthermore, I was invited to write a review about sulfur metabolism in the prestigious *Chlamydomonas Source Book* (2009).

On July 2010 I moved back to the UCO, where under the supervision of Dr. Emilio Fernandez I was responsible to set up a new research line consisting in studying the hydrogen (H₂) production in Chlamydomonas. Here began my scientific independence publishing as last and/or corresponding author. In 2012 I awarded a Ramón y Cajal contract. In 2013 and 2014 I made two short stays at the National Renewable Energy Laboratory (NREL), Golden, USA.

Initially, the results obtained working with H₂ production consisted in a) describing a novel approach to produce H₂ and biomass using non-stress conditions; b) the role of acetic acid in H₂ production and the photosynthetic H₂ production pathways in Chlamydomonas; and c) the importance of the nutrient media composition during H₂ production (*Biotechnol Biofuels*, 2015; *Photosynth Res*, 2015; *Biotechnol Biofuels*, 2017). In 2018, I became Profesor Contratado Doctor and then in 2019 Profesor Titular at UCO. My participation in the European WABA project (2017-2020), extended my studies to the interaction of algae-bacteria for H₂ production and bioremediation of wastewaters. Published results described: a) How acetic acid uptake impact H₂ production in algae-bacteria cocultures; b) A breakthrough approach to synergically combine bacterial and algal H₂; and c) the potential of cocultures for H₂ production (*Algal Res*, 2019, *Bioresour Technol*, 2019; *Cells*, 2020). Finally, I was awarded as PI of the Spanish national projects MULTIVALGA (2020-2024, PID2019-105936RB-C22, coordinated) and TOGETHER2 (2023-2024, TED2021-130438B-I00) and of a regional project (2020-2023, UCO-FEDER 1381175-F), which allowed to identify several Chlamydomonas-bacteria consortia with biotechnological interest in bioremediation, bioH₂ production and biomass generation (*Bioresour Technol*, 2022; *F1000Research*, 2023; *Sci Total Environ*, 2024).

Overall, I have 34 scientific publications (22 as Open Access; 27 in indexed journals and 7 international book chapters): Out of the 27 publications in journals, 21 are in Q1 journals, and 5 in Q2 journals. Out of the 33 publications I am first author in 12 and last or corresponding in 8 of them. The F1000 Prime has recommended 4 of my publications. In the last 10 years, 61.5% of my publications (8) are in the top 25% most cited documents worldwide, 76.9% (10) are in the top 25% cited journals, and 69.2% are international collaborations. My h index is 18.

I subscribed two contracts with companies/research bodies (art. 83) (NREL and Carnegie Institution) and there is a patent submitted on December 2022 to the OEPM (OEPM Submission #P202330306), which is pending of evaluation.

I have supervised two theses defended in 2016 and 2019 (one of them under a joint program with Tehran University), and I currently supervising another one. I have supervised 3 TFMs and 10 TFGs.

I have participated several times as grant reviewer for national agencies (the French ANR and the Argentine FONCYT).

Part C. RELEVANT MERITS (sorted by typology)

C.1. Publications (see instructions) (†, corresponding author)

1. Fakhimi, N., Torres, M.J., Fernández, E., Galván, A., Dubini, A., **González-Ballester, D.** (2024) Chlamydomonas reinhardtii and Microbacterium forte sp. nov., a mutualistic association that favors sustainable hydrogen production. *Science of the Total Environment*, 913, art. no. 169559.
2. Torres, M.J., Fakhimi, N., Dubini, A., **González-Ballester, D.** (2023) Stenotrophomonas goyi sp. nov., a novel bacterium associated with the alga Chlamydomonas reinhardtii. *F1000Research*, 12, art. no. 1373
3. Torres, M.J., **González-Ballester†, D.**, Gómez-Osuna, A., Galván, A., Fernández, E., Dubini, A. (2022) Chlamydomonas-Methylobacterium oryzae cooperation leads to increased biomass, nitrogen removal and hydrogen production. *Bioresour Technol*, 352, art. no. 127088
4. Fakhimi, N., **Gonzalez-Ballester†, D.**, Fernández, E., Galván, A., Dubini, A. (2020) Algae-Bacteria Consortia as a Strategy to Enhance H₂ Production. *Cells*, 9 (6), art. no. 1358



5. Fakhimi, N., Dubini, A., Tavakoli, O., **González-Ballester, D.** (2019) Acetic acid is key for synergetic hydrogen production in Chlamydomonas-bacteria co-cultures. *Bioresource Technology*, 289, art. no. 121648
6. Fakhimi, N., Tavakoli, O., Marashi, S.-A., Moghimi, H., Mehrnia, M.R., Dubini, A., **González-Ballester, D.** (2019) Acetic acid uptake rate controls H₂ production in Chlamydomonas-bacteria co-cultures. *Algal Research*, 42, art. no. 101605
7. **González-Ballester, D.**, Sanz-Luque, E., Galván, A., Fernández, E., de Montaigu, A. (2018) Arginine is a component of the ammonium-CYG56 signalling cascade that represses genes of the nitrogen assimilation pathway in Chlamydomonas reinhardtii *PLoS ONE*, 13 (4), art. no. e0196167
8. **González-Ballester, D.**, Jurado-Oller, J.L., Galván, A., Fernández, E., Dubini, A. (2017) H₂ production pathways in nutrient-replete mixotrophic Chlamydomonas cultures under low light. *Biotechnology for Biofuels*, 10 (1), art. no. 117
9. Jurado-Oller, J.L., Dubini, A., Galván, A., Fernández, E., **González-Ballester, D.** (2015) Low oxygen levels contribute to improve photohydrogen production in mixotrophic non-stressed Chlamydomonas cultures. *Biotechnology for Biofuels*, 8 (1), art. no. 149
10. **Gonzalez-Ballester, D.**, Jurado-Oller, J.L., Fernandez, E. (2015) Relevance of nutrient media composition for hydrogen production in Chlamydomonas. *Photosynthesis Research*, 125 (3), pp. 395-406.

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

1. 2022. 25th Nitrogen Cycle Meeting. Rome, Italy. **International. Oral presentation.** M.J. Torres, **D. González-Ballester**, A. Gómez-Osuna, A. Galván, E. Fernandez and A. Dubini
2. 2021. Microalgas como factorías celulares para la producción de energía (CIEMAT). Online. **International. Oral presentation.** D. Gonzalez-Ballester
3. 2019. IWAAlgae2019, IWA Conference on Algal Technologies and Stabilization Ponds for Wastewater Treatment and Resource Recovery. Valladolid, Spain. **International. Oral presentation.** Neda Fakhimi, **David Gonzalez-Ballester**, Alexandra Dubini, Omid Tavakoli
4. 2019. IWAAlgae2019, IWA Conference on Algal Technologies and Stabilization Ponds for Wastewater Treatment and Resource Recovery. Valladolid, Spain. **International. Poster.** Authors: María J. Torres, **David Gónzalez-Ballester** and Alexandra Dubini
5. 2017. AlgaEurope Conference, Germany. **International. Poster. Authors: David Gonzalez Ballester** and Neda Fakhimi.
6. 2016. XXXIX Congreso de la Sociedad Española de Bioquímica y Biología Molecular (SEBBM). **National. Poster.** Authors: Jurado-Oller, JL, Dubini, Alexandra, Galván, A, Fernández, E, **Gonzalez-Ballester, D**
7. 2016. 11th International Hydrogenase Conference. Marseille, France. **Oral Presentation. Author: David Gonzalez Ballester.**
8. 2016. XIII Reunión de Biología Molecular de Plantas. Oviedo, Spain **National. Invited Oral presentation. Author: David Gonzalez Ballester**
9. 2014. European Hydrogen Conference (EHEC), Seville, Spain. **International. Poster. Author: David Gonzalez Ballester**
10. 2013. 10th International Hydrogenase Conference. Szeged, Hungary. **International. Poster. Author. David Gonzalez Ballester.**

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. 2023-2024. Algas-Bacterias: respuestas frente al reto del H₂ verde (TOGETHER²). TED2021-130438B-I00. MICINN-Plan Estatal 2021-2023 De Investigación Científica, Técnica Y De Innovación. Proyectos estratégicos orientados a transición ecológica y digital 2021. 235.750€. Universidad de Córdoba. PI. **David Gonzalez Ballester** and Alexandra Dubini



2. 2022-2023. Producción de hidrógeno y otros biocombustibles en microalgas: metabolismo de fotoasimilación de acetato en hipoxia. 1381175-F. UCO-FEDER Andalucía. 34.650€. Universidad de Córdoba. **PI: David Gonzalez Ballester** and Alexandra Dubini.
3. 2020-2024. Gestión sostenible de residuos lácteos y olivaderos a través de la multivalORIZACIÓN integrada de la biomasa de microalgas (MULTIVALGA). PID2019-105936RB-C22. MINECO-Programa Estatal I+D+i Retos Tipo Coord. 157.300€. Universidad de Córdoba. **PIs: David Gonzalez-Ballester** y Alexandra Dubini
4. 2017-2020. Wastewater bioremediation using Algae-Bacteria consortia for rural Area (WABA). ERANETMED2-72-300/PCIN2017-03. European Commission, ERANET-APCIN. 140.000€. Universidad de Córdoba. **PI: Alexandra Dubini. Research Team: David Gonzalez Ballester** and Aurora Galván Cejudo
5. 2016-2019. Señalización y metabolismo de Nitrato en Chlamydomonas (NISEME). BFU2015-70649-P. Ministerio de Economía y Competitividad. 213.444 €. Universidad de Córdoba. **PI: Aurora Galván Cejudo. Research Team: David Gonzalez Ballester et al.**
6. 2015-2019. RED transfronteriza para el desarrollo de productos innovadores con microalgas (ALGARED). POCTEP-0055_ALGARED_PLUS. INTERREG V. (Portugal-Spain). 191.302€. Universidad de Córdoba. **PI: Emilio Fernández Reyes. Research Team: David Gonzalez Ballester et al.**
7. 2014-2019. Señalización positiva y negativa para la asimilación de nitrato y la producción de hidrógeno. P12-BIO-502. Consejería de Innovación, Ciencia y Empresa. 168.614,00€. Universidad de Córdoba. **PI: Emilio Fernandez. Research Team: David Gonzalez Ballester et al**
8. 2016-2017. Estudios del metabolismo del hidrógeno en algas y cianobacterias. XXI PP. Modalidad 4.1. XXI Plan Propio Universidad de Córdoba. 22.300,12€. Universidad de Córdoba. **PI: Alexandra Dubini. Research Team: David Gonzalez Ballester**
9. 2012-2015. Genómica Funcional de la Asimilación de Nitrógeno y Producción de energía Chlamydomonas. BFU2011-29338. Ministerio de Ciencia e Innovación. 263.780€. Universidad de Córdoba. **PI: Emilio Fernandez Reyes. Research Team: David Gonzalez Ballester et al**

C.4. Contracts, technological or transfer merits

Contracts

1. 2020-2021. Papel del polifosfato en los procesos de fotoprotección en Chlamydomonas. Art. 83-12020143-Carnegie. Universidad de Córdoba-Carnegie Institution of Science (USA). 11.500€. **PI: David Gonzalez Ballester** and Emanuel Sanz Luque
2. 2016-2018. Preliminary characterization of FDX Knock-out Mutants and Generation of FDX1 Knock-down Mutants. Art. 83-12015151-NREL. Universidad de Córdoba-National Renewable Energy Laboratory (USA). 86.000€. **PI: David Gonzalez Ballester**

Patents

Uso de *Microbacterium fakhimi* en co-cultivos para biorremediación, producción de biomasa e hidrógeno. Authors: **David Gonzalez Ballester**, Neda Fakhimi and Alexandra Dubini submitted on December 2022 to the OEPM (OEPM Submission #P202330306), which is pending of evaluation