CVA-Alberto Elías Villalobos

CV date	04/02/2022

Part A. PERSONAL INFORMATION

First name	Alberto		
Family name	Elías Villalobos		
Gender (*)	Male	Date of Birth	31/05/1980
Open Researcher and Contributor ID (ORCID) (*)		0000-0001-8299-2063	

(*) Mandatory

A.1. Current position

Position	"Maria Zambrano" researcher		
Initial date	01/03/2022		
Institution	University of Seville		
Department/Centre	Dpt. of Genetics	Institute of Biomedicine of Seville	
Country	Spain	Phone number	
Keywords	Gene expression regulation, Complex assembly, Transcription, Chromatin, SAGA, NuA4, Meiosis, HR, S. cerevisiae, S. pombe		

A.2. Previous positions

Period	Position/Institution/Country
2020-2021	Postdoctoral researcher/Institut Curie/France
2014-2018	Postdoctoral researcher/Montpellier Cell Biology Research Center/France
2012-2014	Profesor Ayudante/Pablo Olavide University/Spain
2013	Postdoc short-term stay/ Montpellier Cell Biology Research Center /France
2011-2012	Research assistant/Pablo de Olavide University/Spain
2006-2011	PhD student/CABD-Univ. Pablo Olavide/Spain
2009	PhD student short term stay/Institute for Applied Bioscience/Germany
2007	PhD student short term stay/MPI Terrestrial Microbiology/Germany

A.3. Education

PhD, Graduate Degree	University/Country	Year
PhD	Pablo de Olavide University/Spain	2011
DEA	Pablo de Olavide University/Spain	2006
Bachelor's degree	Pablo de Olavide University/Spain	2004

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

I did my PhD in the laboratory of Prof. Dr. José I. Ibeas (CABD; Pablo de Olavide University), **awarded with 2 fellowships from CSIC: I3P-Postgrado (1 year) and a I3P-Predoctoral (4 years)**. My main PhD project described, for the first time, the role of the widely conserved transcription repressor Tup1, in a plant pathogenic fungus, *Ustilago maydis*. Using cell and molecular biology techniques, as well as microscopy, we discovered Tup1 as essential for filamentation and virulence of this plant pathogen. In parallel, I extensively contributed to a pioneering project studying the role of protein glycosylation in phytopathogenesis, using *U. maydis* as a model system. We discovered the specific steps of protein O-mannosylation and N-glycosylation that are essential for fungal phytopathogenesis and the genes involved. Part of this work was performed in collaboration with Dr. Regine Kahmann (Marburg, Germany). Altogether, my PhD works resulted in **1 original article as first author** (1 PLoS Pathog.), **2 as second author** (2 Plant Cell), **2 reviews** (1 Plant Sign. & Behav., 1 Fungal Gen. & Biol.) and **1 other publication** (1 PLoS Pathog.). These works were presented at different conferences, including several International Ustilago Meetings (2006, 2008, 2010), the Spanish Society of Genetics Congress (2009) and the International Conference on Fungal Genetics (2012). During my PhD I also taught genetics at the University and I mentored one undergraduate student, who is currently working as a postdoc in Stanford (USA). Additionally, I did 2 stays abroad (3 months each), at the MPI for Terrestrial Microbiology (2007, Marburg, Germany), funded by an **EMBO fellowship**, and at the Institute for Applied Biosciences (2009, Karlsruhe, Germany), contributing to the full setup of *U. maydis* as a model

system in Dr. Ibeas lab, previously working with *S. cerevisiae*. My **PhD was awarded with 2 prizes** (1 prize of Excellence-University, 1 prize to best PhD thesis-Seville City Hall).

After my PhD, I initially worked on the role of histone deacetylases in dimorphism and virulence in *U. maydis*. In 2013, **I joined the team of Dr. Dominique Helmlinger (Montpellier Cell Biology Research Center (CRBM), France)** to improve my technical skills and project, which allowed me to discover Hos2 as the main histone deacetylase controlling *U. maydis* virulence. These results, among others, led to **3 publications, in international collaboration, in which I am first and co-corresponding author** (1 PLoS Pathog., 1 Microb. Cell, 1 Fungal Gen. & Biol.).

Then, I moved to a more amenable model system, the fission yeast *Schizosaccharomyces pombe*, to handle a completely unsolved question which is to understand how multifunctional protein complexes assemble, and how assembly impacts complex functionality. This work has led to **3 publications as first author** (1 Nature Comm.,1 Cell Rep., 1 Bioch. Soc. Trans.) and **1 ongoing article in international collaboration with the team of Dr. Juan Mata (Cambridge, UK) in which I am first and co-corresponding author** (under review, STAR Protocols). In this period, I setup tandem affinity purifications of different protein complexes (SAGA, NuA4, TORC1, TORC2, TTT) and established new techniques in the lab, such as RNA-IP. The structural biology part of my works was performed with the advice of Patrick Schultz's team (IGBMC, Strasbourg). The results were presented in international conferences such as the International Pombe Meeting (2017) and the EMBO Workshop on Gene Transcription in Yeast (2018). During this period, I was awarded with a **2-years grant from the "Fondation pour la Recherche Médicale"** and I mentored one master student and one PhD student, the latter working now at the Karolinska Institute (Sweden). I have review articles for Peer J, PLoS Pathogens, Current Genetics and PLoS ONE and contributed to revisions for NAR. Finally, I was the representative of the postdoctoral community at the CRBM.

My research program aims to decipher the rules of assembly and regulation of multifunctional complexes. Defects in protein complex assembly generates proteotoxic stress, affecting cellular homeostasis. I envision to understand how cells coordinate the expression, maturation and assembly of individual subunits in response to changes in physiological conditions. A main physiological change in yeast occurs when they initiate the meiotic program. With the aim of improving my knowledge in meiosis, **in 2020 I joined the team of Dr. Valérie Borde (Institut Curie, France)**, an internationally recognized scientist in the field, with whom I collaborate now. During this time, I have become proficient in purification of protein complexes during meiosis and at newly synthesized DNA. I have mentored one master student and one PhD student.

Finally, I have been recently awarded with a **María Zambrano grant**, to pursuit my scientific career in the transcription and complex assembly fields.

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

C.1. Publications *(see instructions)*

1. Toullec D*, **Elías-Villalobos A***, Faux C, Noly A, Lledo G, Séveno M, Helmlinger D. **2021**. The Hsp90 Cochaperone TTT Promotes Cotranslational Maturation of PIKK Kinases Prior to Complex Assembly. *Cell Reports*. Oct 19; 37(3):109867. ***co-first authors.**
2. **Elías-Villalobos A**, Fort P, Helmlinger D. **2019**. New insights into the evolutionary conservation of the sole PIKK pseudokinase Tra1/TRRAP. *Biochemical Society Transactions*. Nov 26; pii: BST20180496.
3. **Elías-Villalobos A**, Toullec D, Faux C, Seveno M, Helmlinger D. **2019**. Chaperone-mediated ordered assembly of the SAGA and NuA4 transcription co-activator complexes. *Nature Communications*. Nov 20;10(1):5237. **Editor's Highlighted**.
4. **Elías-Villalobos A**$^{(AC)}$, Barrales RR$^{(AC)}$, Ibeas JI. **2019**. Chromatin modification factors in plant pathogenic fungi: Insights from Ustilago maydis. *Fungal Genetics and Biology*. Apr 10; 129:52-64. **(AC = Corresponding author)**.
5. **Elías-Villalobos A**$^{(AC)}$, Helmlinger D, Ibeas JI$^{(AC)}$. **2015**.Histone deacetylases: revealing the molecular mechanism of dimorphism in pathogenic fungi. *Microbial Cell*. Nov 4; 2: 491-493. **(AC = Corresponding author)**.

6. **Elías-Villalobos A**[(AC)], Fernández-Álvarez A, Moreno-Sánchez I, Helmlinger D[†], Ibeas JI[†(AC)]. **2015**. The Hos2 histone deacetylase controls *Ustilago maydis* virulence through direct regulation of mating-type genes. *PLoS Pathogens*. Aug 28; 11: e1005134. [†]co-senior authors **(AC = Corresponding author)**.
7. Fernández-Álvarez A, **Elías-Villalobos A**, Jiménez-Martín A, Marín-Menguiano M, Ibeas JI. **2013**. Endoplasmic reticulum glucosidases and protein quality control factors cooperate to establish biotrophy in Ustilago maydis. *Plant Cell*. Nov 26; 25:4676-4690.
8. **Elías-Villalobos A**, Fernández-Álvarez A, Ibeas JI. **2011**. The General Transcriptional Repressor Tup1 Is Required for Dimorphism and Virulence in a Fungal Plant Pathogen. *PloS Pathogens*. Sep 1; 7: e1002235.
9. Fernández-Álvarez A, **Elías-Villalobos A**, Ibeas JI. **2010**. Protein glycosylation in the phytopathogen Ustilago maydis: From the core oligosaccharide synthesis to the ER glycoprotein quality control system, a genomic analysis. *Fungal Genetics and Biology*. Jun 8; 47: 727-735.
10. Fernández-Álvarez A, **Elías-Villalobos A**, Ibeas JI. **2009**. The O-mannosyltransferase PMT4 is essential for normal ppressorium formation and penetration in Ustilago maydis. *Plant Cell*. Oct 30; 21: 3397-3412.

C.2. Congresses

Total: 24 contributions (2 invited seminars, 9 oral presentations as first author and speaker, 5 posters as first author, 8 other contributions (7 as second and 1 as third author)), including:

1. *Talk*. **Elías-Villalobos A**. IBIS-WISE. Seville, Spain (online), Dec **2020**.
2. *Invited seminar*. **Elías-Villalobos A**. Institut Curie-Guest of Valérie Borde, Paris, France, Jan **2020**.
3. *Poster*. **Elías-Villalobos A**, Faux C, Toullec D, Lledo G, Wagner K, Séveno M, Helmlinger D. EMBO workshop on " Gene transcription in yeast: from global analyses to single cells". Sant Feliu de Gixols, Spain, Jun **2018**.
4. *Talk*. **Elías-Villalobos A**, Faux C, Toullec D, Lledo G, Wagner K, Assaillit C, Séveno M, Helmlingre D. 9th International Fission Yeast Meeting. Banff, Canada, May **2017**.
5. *Talk*. **Elías-Villalobos A**, Lledo G, Wagner K, Laboucarié T, Séveno M, Helmlinger D. PI3K protein kinases conference. IFOM, Milan, Italy, Nov **2015**.
6. *Invited seminar*. **Elías-Villalobos A**. UMR Microbiologie Adaptation Pathogénie à Lyon. Guest of Cécile Ribot, Lyon, France, Nov **2014**.
7. *Poster*. **Elías-Villalobos A**, Fernández-Álvarez A, Ibeas JI. 11th European Conference on Fungal Genetics. Marburg, Germany, Mar **2012**.
8. *Talk*. **Elías-Villalobos A**, Fernández-Álvarez A, Ibeas JI. V International Ustilago Meeting. Guanajuato del Bajío, México. Dec, **2010**.
9. *Talk.* **Elías-Villalobos A**, Fernández-Álvarez A, Ibeas JI. XXXVII Congress of the Spanish Society of Genetics. Torremolinos, Málaga, Spain. Sept-Oct **2009**.
10. *Talk.* **Elías-Villalobos A**, et al. 4th International Conference on the Genome and Biology of Ustilago. Schloss Rauischlolzhausen. Germany. Aug **2008**.

C.3. Research projects

1. PROG. EMERG. COVID VDU REPAIR. A novel copper-free chemistry approach to study DNA synthesis associated to damage repair. Funded by Institut Curie, call 2020. PI: Valérie Borde-Institut Curie-CNRS-UMR3244. 2021. 20000€. Contribution: Researcher (**2020-2021**) - development of the biochemistry part.
2. EQU201903007785. Contrôle de la synthèse d'ADN lors de la réparation des cassures double-brin et conséquences sur la fertilité et la stabilité du génome. Funded by FRM, call 2019. PI: Dr. Valérie Borde-Institut Curie-CNRS-UMR3244. 2020-2023. 280000€. Contribution: Researcher (**2020-2021**) - set up of iPOND in yeast.
3. ANR-15-CE12-0009. Coordination du Contrôle de l'Expression des Gènes en Réponse aux Nutriments. Funded by National Research Agency (ANR). National call, France. PI: Dr. Dominique Helmlinger-CNRS. 01/10/2015-30/09/2019. 250000€. Contribution: Researcher (**2015-2018**) - main beneficiary and developer of the project.
4. BIO2013-48858-P. Identificación y caracterización de glicoproteinas del hongo fitopatógeno Ustilago maydis implicadas en el proceso infectivo de la planta de maíz. Funded by Spanish Ministry of Economy and Competitivity. National call, Spain. PI: Dr. José Ignacio Ibeas Corcelles-

Pablo de Olavide University. 01/01/2014-31/12/2017. 272250€. Contribution: Researcher (**2013-2015**).

5. BIO2010-16787. Análisis de la regulación de genes y proteínas implicadas en la transición levadura-hifa en Saccharomyes cerevisiae y en el hongo patógeno Ustilago maydis. Funded by Spanish Ministry of Science and Innovation. National call, Spain. PI: Dr. José Ignacio Ibeas Corcelles-Pablo de Olavide University. 01/01/2011-31/12/2013. 121000€. Contribution: Researcher (**2011-2012**) – development of the research line concerning *Ustilago maydis*.
6. BIO2007-60531. Estudio de la regulación transcripcional del gen FLO11 y de las modificaciones postransduccionales de la proteína Flo11p y su papel en la formación de biofilm en Saccharomyces cerevisiae. Funded by Spanish Ministry of Education and Science. National call, Spain. PI: Dr. José Ignacio Ibeas Corcelles-Pablo de Olavide University. 26/12/2007-30/11/2010. 80000€. Contribution: Researcher (**2010**).
7. APP2E03062. Análisis de los mecanismos de acción de las proteínas antifúngicas Wheatwin1 y Weatwin2 purificadas de trigo. Funded by Pablo de Olavide University. Plan Propio. PI: José I. Ibeas Corcelles-Pablo Olavide Univ. 04/10/2004-31/12/2004. 7000€. Contribution: postgrad fellow (**2004**)

C.5. Fellowships and grants

(1) **2022-** . María Zambrano grant. Univ of Seville. 2 years. 99500 €. **(2)** **2014-2016**. FRM Postdoc grant. Fondation Recherche Médicale. 2 years 110000 €. **(3)** **2013**. Postdoc short-term fellow. UPO. 6 months. 6540 €. **(4)** **2006-2009**. I3P PhD fellow. CSIC. 4 years. **(5)** **2009**. I3P short-term stay, CSIC. **(6)** **2007**. EMBO short-term fellow. 3 months. 7263 €. **(7)** **2005**. I3P Postgraduate fellow. CSIC. 1 year.

C.6. Reviewing experience

PLoS Pathogens (**2019**), Current Genetics (**2019**), Peer J (**2019**), Cellular Microbiology (**2018**), PLoS ONE (**2012**). Reviewing contribution for NAR (**2020**-Dr. Borde, **2017**-Dr. Helmlinger),

C.7. Awards

Extraordinary doctorate award. Pablo de Olavide University, Seville, Spain (**2012**)
Seville City Council prize to best PhD thesis, Seville, Spain (**2012**).

C.8. Teaching experience

Formal academic teaching

2011-2014. Assistant lecturer (Profesor Ayudante). Theoretical and practical courses in genetics (96,7h).
2004-2011. PhD student. Practical courses in genetics. 60h/year (420h total).

Mentoring students

2021. Emilie Mylne-PhD student (Dr. Borde lab)
2021. Anissa Mechri-Master student (Dr. Borde lab)
2015-2018. Damien Toullec-Master and PhD student (Dr. Helmlinger lab)
2015. Kerstin Wagner-Master student (Dr. Helmlinger lab)
2009-2011. Cristina Rodríguez Mateo-Undergraduate student (Dr. Ibeas lab).

C.9. Responsibilities

2011-2013. Responsible subject "Biology", Environmental Sciences. Pablo de Olavide University.
2016-2018. Representative of the postdocs at the CRBM.

C.10. Qualifications

2019. Qualified for *Profesor Contratado Doctor* (ANECA)
2019. Qualified for *Maître de Conférences* (*Ministère de l'Enseignement supérieur, de la Recherche et de l'Innovation*, France).