

<b>Part A. PERSONAL INFORMATION</b>		<b>CV date</b>	27/01/2021
First and Family name	Covadonga Vázquez Estévez		
Social Security, Passport, ID number		Age	
Researcher numbers	Researcher ID	K-2933-2014	
	Orcid code	http://orcid.org/0000-0002-7519-9224	

### A.1. Current position

Name of University/Institution	Universidad Complutense		
Department	Genética, Fisiología y Microbiología		
Address and Country	Avda José Antonio Novais, 12		
Phone number	3934966	E-mail covi@bio.ucm.es	
Current position	Professor	From	06/13/2011
Espec. cód. UNESCO			
Palabras clave	Fungi, mycotoxins, detection, control		

### A.2. Education

PhD	University	Year
Biology	Universidad Complutense	1984

### A.3. JCR articles, h Index, thesis supervised...

- Sexennia of research: 6
- Thesis Supervised in the last 10 years 2 with European mention
- Total citations for the past 5 years: 855 average citations/year: 171 Total citations: 1719
- Total publications in first quartile (Q1): 30
- Index h: 24

## Part C. RELEVANT MERITS

### C.1. Publications (including books)

- Gómez-Albarrán, C.; Melguizo, C.; Patiño, B.; Vázquez, C.; Gil-Serna, J. (2021). Diversity of Mycobiota in Spanish Grape Berries and Selection of *Hanseniaspora uvarum* U1 to Prevent Mycotoxin Contamination. *Toxins* 13: 649. Índice impacto: 3,531 (JCR) Posición: 34 de 139 (Q1, Food Science and Technology). Doi: <https://doi.org/10.3390/toxins13090649>
- Gil Serna, J.; Vázquez, C.; Patiño, B. (2020). Mycotoxins in Functional Beverages: A Review. *Beverages* 6: 52. Doi: <https://doi.org/10.3390/beverages6030052>.
- García-Díaz, M.; Gil-Serna, J.; Vázquez, C.; Botia, M.N.; Patiño, B. (2020). A Comprehensive Study on the Occurrence of Mycotoxins and Their Producing Fungi during the Maize Production Cycle in Spain. *Microorganisms* 8: 141. Índice impacto: 4,152 (JCR) Posición: 37 de 135 (Q2, Microbiology). Doi: <https://doi.org/10.3390/microorganisms8010141>
- Gil-Serna, J., Vázquez, C. & Patiño, B. Genetic regulation of aflatoxin, ochratoxin A, trichothecene, and fumonisin biosynthesis: A review. *Int Microbiol* 23, 89–96 (2020). <https://doi.org/10.1007/s10123-019-00084-2>
- Gil-Serna, J., García-Díaz, M., Vázquez C. and Patiño, B. Significance of *Aspergillus niger* aggregate species as contaminants of food products in Spain regarding their occurrence and their ability to produce mycotoxins. *Food Microbiology*. 82: 240-248 (2019).
- Jessica Gil Serna, Covadonga Vázquez and Belén Patiño. 2020. The Genomic Regions That Contain Ochratoxin A Biosynthetic Genes Widely Differ in *Aspergillus* Section *Circumdati* Species. *Toxins*,12, 754. Doi: <https://doi.org/10.3390/toxins12120754>.

- Marta García-Díaz, Marta, Belén Patiño, Covadonga Vázquez and Jessica Gil-Serna. 2019. A novel Niosome-Encapsulated Essential Oil Formulation to Prevent *Aspergillus flavus* Growth and aflatoxin Contamination of Maize Grains During Storage, *Toxins*, 11: 646. Doi: <https://doi.org/10.3390/toxins11110646>
- Jessica Gil- Serna, Marta García-Díaz, Covadonga Vázquez, María Teresa González-Jaén, Belén Patiño. Significance of *Aspergillus niger* aggregate species as contaminants of food products in Spain regarding their occurrence and their ability to produce mycotoxins. *Food Microbiology*, 82: 240-248, 2019. Doi: <https://doi.org/10.1016/j.fm.2019.02.013>
- Jessica Gil- Serna, Covadonga Vázquez and Belén Patiño. Mycotoxins/Toxicology. Reference Module in Food Science, 1- 7. 2019. Doi: <https://doi.org/10.1016/B978-0-08-100596-5.22630-9>
- Belén Patiño, Covadonga Vázquez, James M. Manning, María Isabel G. Roncero, Dolores Córdoba-Cañero, Antonio Di Pietro, Álvaro Martínez-del-Pozo. Characterization of a novel cysteine-rich antifungal protein from *Fusarium graminearum* with activity against maize fungal pathogens. *International J Food Microbiology*, 283: 45-51. 2018. Doi: <https://doi.org/10.1016/j.ijfoodmicro.2018.06.017>
- Valderrama, María Jose; González-Zorn, Bruno; Calvo, Pilar; Díez-Orejas, Rosalía; Fernández-Acero, Teresa; Gil-Serna, Jessica; de Juan, Lucía; Martín, Humberto; Molina, María; Navarro-García, Federico; Patino, Belen; Plá, Jesús; Prieto, Daniel; Rodríguez, Carmina; Román, Elvira; Sanz, Ana Belén; de Silóniz, Maribel; Suárez, Mónica; Vázquez, Covadonga; Cid, Victor. Educating in antimicrobial resistance awareness: adaptation of the Small World Initiative program to service-learning. *FEMS Microbiology Letters* 365: 1-9. 2018. Doi: [10.1093/femsle/fny/161](https://doi.org/10.1093/femsle/fny/161)
- Gil-Serna, J.; García-Díaz, M.; González-Jaén, M.T.; Vázquez, C.; Patiño, B. (2018). Description of an orthologous cluster of ochratoxin A biosynthetic genes in *Aspergillus* and *Penicillium* species. A comparative analysis. *International Journal of Food Microbiology* 268: 35-43. Índice impacto: 4,006 (JCR) Posición: 16 de 135 (Q1, Food Science and Technology). Doi: <https://doi.org/10.1016/j.ijfoodmicro.2017.12.028>.
- Gil-Serna, J., Patiño, B., Cortés, L., González-Jaén, M.T., Vázquez, C., (2015). *Aspergillus steynii* and *Aspergillus westerdijkiae* as potential risk of OTA contamination in food products in warm climates. *Food Microbiology* 46, 168-175. Índice impacto: 3,682 (JCR) Posición: 11 de 124 (Q1, Food Science and Technology). Doi: <https://doi.org/10.1016/j.fm.2014.07.013>.
- Gil-Serna, J.; Vázquez, C.; González-Jaén, M.T.; Patiño, B. (2015). Clustered array of ochratoxin A biosynthetic genes in *Aspergillus steynii* and their expression patterns in permissive conditions. *International Journal of Food Microbiology* 214, 102-108. Índice impacto: 3,455 (JCR) Posición: 13 de 124 (Q1, Food Science and Technology). Doi: <https://doi.org/10.1016/j.ijfoodmicro.2015.07.020>.
- Gil-Serna, J., Vázquez, C., García-Sandino, F., Márquez, A., González-Jaén, M.T y Patiño, B. (2014) Evaluation of growth and ochratoxin A production by *Aspergillus steynii* and *Aspergillus westerdijkiae* in green-coffee based medium. *Food Research International*. 61: 127-131.
- Gil-Serna, J., Mateo, E., González-Jaén, M.T., Jiménez, M., Vázquez, C. y Patiño B. (2013). Contamination of barley seeds with *Fusarium* species and their toxins in Spain: an integrated approach. *Food additives and Contaminants* 30: 372-380.
- Gil-Serna, J., Patiño, B., Cortés, L., González-Jaén, M.T., y Vázquez, C. (2011). Mechanisms Involved in reduction of ochratoxin A produced by *Aspergillus westerdijkiae* using *Debaryomyces hansenii* CYC 1244. *International Journal of Food Microbiology* 151: 113-118.
- Sardiñas, N., Vázquez, C., Gil-Serna, J., González-Jaén, M.T y Patiño, B. (2011). Specific detection and quantification of *Aspergillus flavus* and *Aspergillus parasiticus* in wheat flour by SYBR® Green quantitative PCR. *International Journal of Food Microbiology*. 145:121-125.
- Marín, P., Moretti, A., Ritieni, A., Jurado, M., Vázquez, C. y González-Jaén, M.T. (2012). Phylogenetic analyses and toxigenic profiles of *Fusarium equiseti* and *Fusarium acuminatum* isolated from cereals from Southern Europe. *Food Microbiology* 31: 229-237.

- Gil-Serna, J., Vázquez, C., Sardiñas, N., González-Jaén, M.T y Patiño, B.(2011). Revision of ochratoxin a production capacity by the main species of *Aspergillus* section *circumdati*. *Aspergillus steynii* revealed as the main risk of OTA contamination. *Food Control*. 22: 343-345.

## Thesis supervised

- "HONGOS PRESENTES EN CONIFERAS DE VIVEROS". Dña. M<sup>a</sup> Carmen Muñoz UCM. 1991. Apto cum laude
- "PURIFICACIÓN Y CARACTERIZACIÓN DE UNA EXOPOLIGALACTURONASA DE *Fusarium oxysporum* f. sp. *radicis lycopersici*", Dña. Belén Patiño Álvarez. UCM . 1999. Sobresaliente cum laude
- "ANÁLISIS GÉNICO, REGULACIÓN Y VARIABILIDAD DE POLIGALACTURONASAS EN EL GÉNERO *Fusarium*". Dña. Martha Lucía Posada Buitrago. UCM. Biología. 1999. Sobresaliente cum laude
- "ANÁLISIS Y DIAGNÓSTICO MOLECULAR DE *Fusarium verticillioides* Y OTRAS ESPECIES DEL COMPLEJO *Gibberella fujikuroi* PRODUCTORAS DE FUMONISINAS". D. Salvador Mirete Castañeda. UCM. 2004. Sobresaliente cum laude.
- "CARACTERIZACIÓN DE LOS GENES DE POLIGALACTURONASAS DE *Fusarium oxysporum* f. sp. *radicis lycopersici* Y SU ANÁLISIS EN SISTEMAS HETERÓLOGOS". D. Aitor de las Heras Gutiérrez. UCM. 2004. Sobresaliente cum laude.
- "ANÁLISIS DE GENES DE TRANSPORTADORES ABC Y MFS EN *Fusarium verticillioides* Y SU RELACIÓN CON LA PRODUCCIÓN DE FUMONISINAS". Dña. Elena López Errasquín. UCM. Mayo 2005. Sobresaliente cum laude.
- "ANÁLISIS Y DIAGNÓSTICO DE ESPECIES DE *FUSARIUM* PRODUCTORAS DE TOXINAS, Y SU PRESENCIA EN CEREALES ESPAÑOLES". D. Miguel Jurado García-Posada. UCM. 2006. Sobresaliente cum laude.
- "ANÁLISIS DE FACTORES ECOFISIOLÓGICOS QUE INFLUYEN EN LA EXPRESIÓN DE GENES RELACIONADOS CON LA BIOSÍNTESIS DE TOXINAS EN ESPECIES DE *FUSARIUM*". Dña. Patricia Marín García. UCM. 28 de abril de 2010. Sobresaliente cum laude. Doctorado europeo.
- "PRODUCCIÓN DE OCRATOXINA A EN LAS PRINCIPALES ESPECIES DE *Aspergillus* SECCIÓN *CIRCUMDATI*. ESTUDIO DE LOS GENES IMPLICADOS, MÉTODOS DE DETECCIÓN Y CONTROL". DOCTORANDO: Dña. Jessica Gil Serna. UCM 22 de junio de 2011. Sobresaliente cum laude. Doctorado europeo

## Part B. CV SUMMARY (max. 3500 characters, including spaces)

Since 1998, my research activity has been oriented towards the world of toxic mushrooms. We started these investigations through the granting of a COST action (1998-2001) that subsequently materialized in the granting of a European project (2000-2003). The presence of toxigenic fungi and their relative secondary metabolites in vegetable products was one of the most important social and economic challenges; it was then estimated that 20% of the cereals grown in the EU and intended for human and animal consumption were contaminated and contained evaluable mycotoxins. The increased levels and spread of fungal toxins and their high toxicity were putting pressure on European authorities to impose severe limitations on the presence of mycotoxins in agricultural communities.

In this stage we have worked on three aspects. In the first place, given the difficulty of identifying fungal species with precision, we set out to search for specific sequences in toxigenic species for the development of primers for the detection of the main toxigenic species; the complexity of the fungal community in the plant, soil or matrices during storage is high and the establishment and prevalence of certain species can be continuously modified by multiple factors (competition, host resistance and environmental factors); therefore, the correct and accurate detection of pathogens and other fungi that colonize plants and food was a prerequisite to prevent diseases in plants, animals and the human species, these primers allowed us to develop tools for early diagnosis and thus prevent the risk caused by the contamination of food matrices with mycotoxins, later protocols were developed for the quantification of toxigenic fungi to apply directly to food matrices, this allowed us to estimate the degree of contamination and determine the risk of the presence of mycotoxins. Thus, we can say that we developed protocols for the identification and quantification of the main species producing mycotoxins belonging to the genera *Fusarium* and *Aspergillus* and the protocols

were optimized for direct application in food matrices. We have identified the main ochratoxin A synthesis genes in the species *A. steynii* of the *Circumdati* section and their sequencing by massive sequencing tools to know their regulatory regions and trace their presence in the similar species unknown until now. On the other hand, we are devoting great efforts in the design of sustainable strategies for the control of these fungi, in recent years we have conducted studies with biocontrol agents (yeasts) and with plant extracts, the objective is to find alternative and sustainable methods to the classic fungicides, or at least to reduce their use by the integrated treatments that now import their presence in the environment and the food chain.

## Part C. RELEVANT MERITS

### C.2. Research projects and grants

- Apostando por la calidad y seguridad de los cereales españoles: estrategias sostenibles para detectar y reducir el riesgo de hongos y micotoxinas emergentes AGL2014-53928-C2-2-R. IP: Belén Patiño y MT González Jaén
- Cambio climático y nuevos hábitos alimentarios: nuevos escenarios con impacto potencial sobre el riesgo de micotoxinas en España. AGL2010-22182-C04-01/ALI. IP: M. T. González-Jaén.
- Hongos y levaduras de interés en agroalimentación. Universidad Complutense-Santander Central Hispano (GR58/08). IP: Covadonga Vázquez Estévez.
- Presencia simultánea de micotoxinas en alimentos. Evaluación del peligro potencial y real. AGL2007-66416-C05-2/ALI. IP: M<sup>a</sup> Teresa González-Jaén.
- Hongos y levaduras de interés en agroalimentación. Universidad Complutense/ CM (910644). IP: Covadonga Vázquez Estévez
- Prevención y control de micotoxinas emergentes en cereales, frutas y derivados. AGL 2004-07549-c05-05/ALI. IP: M<sup>a</sup> Teresa González-Jaén
- Detección y cuantificación de cepas de *Fusarium* productoras de fumonisinas por PCR en alimentos contaminados. CAM (07G/0007/2003). IP: Covadonga Vázquez

### C.3. Contracts

- Identificación genética de variedades vegetales. Artículo 83, Special new fruit licensing mediterraneo, S.L. IP: MT.G.J.
- Asistencia técnica para la detección de patógenos de interés en defensa. Expediente nº 3170076 PPT nº NBQ20070113B. (Ministerio de Defensa). IP: CVE.
- Asistencia técnica para la detección de patógenos de interés en defensa. Número referencia: 325/FM/JAEPRL/ACS. (Ministerio de Defensa). IP: CVE
- Sistemas de validación de técnicas para productos alternativos a antibióticos en Alimentación Animal. Referencia: 49-2005 y 2-2004. NOREL, S.A. IP: CVE

### C.4. Patents

- González-Jaén, M.T., Mirete, S., Vázquez, C. y Patiño, B. Método de detección e identificación de cepas de *Fusarium verticillioides* productoras de fumonisinas. Nº de solicitud: 200 200 506 Nº Publicación: 2204276. España. UCM
- González-Jaén, M.T., Mirete, S., Vázquez, C., y Patiño, B. Método de detección e identificación de cepas de *Fusarium verticillioides* Nº de solicitud: 200 301 095 Nº Publicación: 2204343. España. UCM.

### C.5, C.6, C.7... (e. g., Institutional responsibilities, memberships of scientific societies...)

- DIRECTOR OF THE MICROBIOLOGY DEPARTMENT III. Developed Activity: Academic tasks derived from said position. Complutense University of Madrid. Faculty of Biology. Date from: 03/01/2004 To: 03/01/2012.

- Academic member of the Evaluation Commission of Degree-Master Sciences of the VERIFICA Program of the National Agency for the Evaluation of Quality and Accreditation (ANECA). Appointment from February 1, 2014 to the present.
- Professional Vocal of the Sciences Commission of the VERIFICA Program of the National Agency for the Evaluation of Quality and Accreditation (ANECA). Appointment from February 1, 2015 to the present.