

Part A. PERSONAL INFORMATION		CV date		2022/03/15
First and Family name	Laura Isabel de Eugenio Martínez			
Social Security, Passport, ID number	46882934X	Age	41	
Codigo orcid	0000-0002-0496-8663			

A.1. Current position

Name of University/Institution	Consejo Superior de Investigaciones Científicas			
Department	Microbial and plant biotechnology			
Address and Country	C/ Ramiro de Maeztu 9, 28040, Madrid			
Phone number	918373112	E-mail	lidem@cib.csic.es	
Current position	Titulado Superior	From	2003	
Espec. cód. UNESCO	230209 - Enzymology; 240300 - Biochemistry; 241406 - Fungí; 241501 - Molecular biology of microorganisms			
Palabras clave	Microbiology; Biochemistry			

A.2. General Indicators of scientific production

Supervised thesis in the last 5 years:

- Juan Antonio Méndez-Liter**, Universidad Complutense de Madrid, 2020. Estudio funcional de las β -glucosidasas del hongo *Talaromyces amestolkiae*: aplicaciones biotecnológicas y diseño racional de catalizadores.
- Manuel Jose Nieto Dominguez**, Universidad Complutense de Madrid, 2018. Estudio de xilanasas fúngicas para el aprovechamiento de la biomasa lignocelulósica.

Citations: 944

Average citations/year for the last 5 years: 110

Publications: 35

h-index: 15

The indicators above have been calculated using Google Citations data base.

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

Since the beginning of my research career I have been interested in the applications derived from the use of microorganisms. Initially, I studied the production of insecticidal fusion proteins in different microbial vectors with the aim of developing more environmentally friendly products. This work was carried out in the context of bioplastics field, a product that was the focus of most of the studies I did during my PhD training. In addition to studying the metabolism of the gram negative bacteria that produced the medium chain length polyhydroxyalkanoate, I focused on analyzing its depolymerization mechanisms in order to obtain high added value products in a controlled way. In this sense, the biochemical characterization of the mclPHA depolymerase was the starting point of my interest in enzymatic catalysis, which has been further developed in my postdoctoral phase. In this latter stage I have been working with robust catalyst from filamentous fungi. Particularly, my research has been focused in two types of enzymes, whose role in the exploitation of lignocellulosic biomass is crucial: hydrolases and fungal oxidases. Within fungal hydrolases, we are currently investigating the mechanisms of action of cellulases, hemicellulases and esterases, enzymes that can be applied in many industrial applications. We have isolated and characterized an ascomycete fungus (*Talaromyces amestolkiae*) that has been proved to be a good produced for cellulases and hemicellulases. We have purified and biochemically characterized several hydrolases from this fungus and we keep on working to fully reveal its tremendous potential. Regarding oxidases, peroxidases and laccases are enzymes that fungi use as a first step in deconstruction of the lignocellulosic material, and can also be applied to numerous industrial deinking and

decontamination processes. Currently, our research group has established agreements with several companies with the purpose of transferring the knowledge generated in the laboratory to real life applications. I have directed two doctoral theses as well as several master and degree thesis. Finally, our research group is specially interested in bringing scientific research to the general public, so I have collaborated in the realization of numerous events of scientific divulgation, by translating and adapting experiments based on our real laboratory research.

Part C. RELEVANT MERITS

C.1. Publications in the last 5 years:

1. **M. Nieto-Domínguez, A. Prieto, B. Fernández de Toro, F.J. Cañada, J. Barriuso, Z. Armstrong, S.G. Withers, L.I. de Eugenio and M.J. Martínez.** (2016) Enzymatic fine-tuning for 2-(6-hydroxynaphthyl) β -D-xylopyranoside synthesis catalyzed by the recombinant β -xylosidase BxTW1 from *Talaromyces amestolkiae*. *Microb Cell Fact.* 15:171-186.
2. **J.A. Méndez-Líter, J. Gil-Muñoz, M. Nieto-Domínguez, J. Barriuso, L.I. de Eugenio and M.J. Martínez.** (2017) A novel, highly efficient β -glucosidase with a cellulose-binding domain: characterization and properties of native and recombinant proteins. *Biotechnol Biofuels.* 10:256-271.
3. **M. Nieto-Domínguez, L.I. de Eugenio, P. Peñalver, E. Belmonte-Reche, J.C. Morales, A. Poveda, J. Jiménez-Barbero, A. Prieto, F.J. Plou and M.J. Martínez.** (2017) Enzymatic synthesis of a novel neuroprotective hydroxytyrosyl glycoside. *J Agric Food Chem.* 65:10526-10533.
4. **M. Nieto-Domínguez, L.I. de Eugenio, M.J. York-Durán, B. Rodríguez-Colinas, F.J. Plou, E. Chenoll, E. Pardo, F. Codoñer and M.J. Martínez.** (2017) Prebiotic effect of xylooligosaccharides produced from birchwood xylan by a novel fungal GH11 xylanase. *Food Chemistry.* 232:105-113.
5. **L.I. de Eugenio, J.A. Méndez-Líter, M. Nieto-Domínguez, L. Alonso, J. Gil-Muñoz, J. Barriuso, A. Prieto and M.J. Martínez.** (2017) Differential β -glucosidase expression as a function of carbon source availability in *Talaromyces amestolkiae*: a genomic and proteomic approach. *Biotechnol Biofuels.* 10:161-175.
6. **R. Mtibaa, L.I. de Eugenio, B. Ghariani, I. Louati, L. Belbahri, M. Nasri and T. Mechichi.** (2017) A halotolerant laccase from *Chaetomium* strain isolated from desert soil and its ability for dye decolourization. *3 BIOTECH.* 7. ISSN 2190-572X.
7. **J.A. Méndez-Líter, L.I. de Eugenio, A. Prieto and M.J. Martínez.** (2018) The β -glucosidase secreted by *Talaromyces amestolkiae* under carbon starvation: a versatile catalyst for biofuel production from plant and algal biomass. *Biotechnol Biofuels.* 11:123-137.
8. **L.I. de Eugenio, J.A. Méndez-Líter, V. de los Ríos, A. Prieto and M.J. Martínez.** (2018) β -1,4-endoglucanases from *Talaromyces amestolkiae*: Production of glucooligosaccharides from different β -glucans. *Biocatalysis and Biotransformation.* 36:68-77.
9. **R Mtibaà, J Barriuso, L de Eugenio, E Aranda, L Belbahri, M Nasri, et al.** (2018) Purification and characterization of a fungal laccase from the ascomycete *Thielavia* sp. and its role in the decolorization of a recalcitrant dye. *International journal of biological macromolecules* 120, 1744-1751
10. **JA Méndez-Líter, I Tundidor, M Nieto-Domínguez, BF de Toro, A. Gonzalez Santana, L.I. de Eugenio et al.** (2019) Transglycosylation products generated by *Talaromyces amestolkiae* GH3 β -glucosidases: effect of hydroxytyrosol, vanillin and its glucosides on breast cancer cells. *Microbial cell factories* 18 (1), 97
11. **M Nieto-Domínguez, JA Martínez-Fernández, BF de Toro, J.A. Méndez-Líter, F.J. Cañada, A. Prieto, L.I. de Eugenio, M.J. Martínez** (2019) Exploiting xylan as sugar donor for the synthesis of an antiproliferative xyloside using an enzyme cascade. *Microbial cell factories* 18 (1), 1-12

12. **WDH Schneider, RC Fontana, HM Baudel, FG de Siqueira, J Rencoret, A. Gutiérrez, L.I. de Eugenio, et al.** (2020) Lignin degradation and detoxification of eucalyptus wastes by on-site manufacturing fungal enzymes to enhance second-generation ethanol yield *Applied Energy* 262, 114493
13. **JA Méndez-Líter, M Nieto-Domínguez, BF de Toro, AG Santana, A Prieto, J.L. Asensio, F.J. Cañada, L.I. de Eugenio, M.J. Martínez.** (2020) A glucotolerant β -glucosidase from the fungus *Talaromyces amestolkiae* and its conversion into a glycosynthase for glycosylation of phenolic compounds. *Microbial Cell Factories* 19 (1), 1-13
14. **M. Nieto-Domínguez , B. Fernández de Toro, L.I. de Eugenio, et al.** Thioglycoligase derived from fungal GH3 β -xylosidase is a multi-glycoligase with broad acceptor tolerance. *Nat Commun* 11, 4864 (2020).
15. **C. Murguiondo, A. Mestre, JA. Méndez-Líter, M. Nieto-Domínguez, L.I. de Eugenio, M. Molina-Gutiérrez, M.J. Martínez, A. Prieto.** Enzymatic glycosylation of bioactive acceptors catalyzed by an immobilized fungal β -xylosidase and its multi-glycoligase variant. *Int J Biol Macromol.* (2021), 167:245-254.
16. **JA. Méndez-Líter, L.I. de Eugenio, M. Nieto-Domínguez, A. Prieto, M.J. Martínez.** Hemicellulases from *Penicillium* and *Talaromyces* for lignocellulosic biomass valorization: A review. *Bioresour Technol.* (2021), 324:124623.
17. **L.I. de Eugenio, R. Peces-Pérez, D. Linde, A. Prieto, J. Barriuso, F.J. Ruiz-Dueñas, M.J. Martínez.** Characterization of a dye-decolorizing peroxidase from *Irpex lacteus* expressed in *Escherichia coli*: an enzyme with wide substrate specificity able to transform lignosulfonates. *J. Fungi* (2021), 7, 325.
18. **Z. Azzouz, A. Bettache, N. Boucherba, A. Prieto, M.J. Martínez, S. B, L.I. de Eugenio.** Optimization of β -1,4-endoxylanase production by an *Aspergillus niger* strain growing on wheat straw and application in xylooligosaccharides production. *Molecules* (2021), 26, x.
19. **H. Hage, S. Miyauchi, M. Virágh, E. Drula, B. Min, D. Chaduli, D. Navarro, A. Favel, M. Norest, L. Lesage-Meessen, B. Bálint, Z. Merényi, L.I. de Eugenio, et al.** Gene family expansions and transcriptome signatures uncover fungal adaptations to wood decay. *Environ Microbiol.* (2021) Feb 4.
20. **JA. Méndez-Líter, L.I. de Eugenio, N. Hakalin, A. Prieto, M.J. Martínez.** Production of a β -glucosidase-rich cocktail from *Talaromyces amestolkiae* using raw glycerol: its role for lignocellulose wastes valorization. *Sent to J. Fungi.* (2021).

C.2. Research projects and grants

- 2019-2021. Glicosil hidrolasas y otras enzimas auxiliares para la producción de compuestos de valor añadido (GLYSUS) RTI2018-093683-B-I00
- 2016-2018. Hidrolasas fúngicas: estudios bioquímicos, moleculares y aplicaciones para la revalorización de residuos lignocelulósicos (HIDROFUN). Ref BIO2015 68387-R. IP MJ Martínez, CoIP- Alicia Prieto.
- 2014-2018. Producción sostenible y simbiosis industrial en la Comunidad de Madrid (RETO-PROSOT S2013/MAE-2907). Partners: UCM, CIB-CSIC, INIA, CIEMAT and Proteomics Facility of CIB. Coordinator Ángeles Blanco (UCM), IP CIB M.J. Martínez.



- 2014-2017. Desarrollo de herramientas metagenómicas para producción de biocombustibles (CAMBIOS). RTC-2014-1777-3. Coordinator: Abengoa Research. Partners: Abengoa, CIB, CNB-CSIC, ICP-CSIC, EEZ-CSIC (IP CIB M.J. Martínez).