

Part A. PERSONAL INFORMATION

CV date 11-20-2020

First and Family name	Rafael Balaña Fouce		
Social Security, Passport, ID number	05372722-Z	Age	59
Researcher codes	Open Researcher and Contributor ID (ORCID**)	0000-0003-0418-6116	
	SCOPUS Author ID (*)	56845155300	
	WoS Researcher ID (*)	K-4890-2014	

(*) Optional

(**) Mandatory

A.1. Current position

Name of University/Institution	University of León		
Department	Biomedical Sciences		
Address and Country	Campus de Vegazana s/n		
Phone number	987291590	E-mail	rbalf@unileon.es
Current position	Full Professor	From	2000
Key words	Drug Discovery, Molecular Parasitology, Toxicology, Biotechnology		

A.2. Education

PhD, Licensed, Graduate	University	Year
Licensed in Biology	Autónoma de Madrid	1982
PhD in Biology	Autónoma de Madrid	1989

A.3. General indicators of quality of scientific production (see instructions)

- N° research segments (six-year period): 6 (5 research + 1 transference) last research segment recognized
- PhD: 2010-2020 period: 4
- Total number of publications 114, from 2010-2020 period: 55 (source PubMed)
- Total cites 1942, from 2010-2020 period: 1291
- Average citations/year: 117
- H index = 25 (source Scopus)

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

Training: Graduate in Biology (1982) and PhD Biology (1989) UAM.

Positions held: Associate Professor UCM (1985-1990) Assistant Professor ULE (1990-2000); Professor ULE (2000-continued).

Scholarships: MEC Collaboration Grant (1981-1982); MEC Fellowship abroad (1990-1991); MEC Short Stays Abroad (1993).

Postdoctoral Training: Dpt of Physiology and Cancer Research PENNSTATE USA (1990-1991). Dept. Biochemistry CDRI India (1993 and 1997) total 7 months. Dept. Biochemistry NCNPR, Oxford Mississippi USA (2003) total 6 months.

Academic positions: Director of the Department of Pharmacology, Toxicology and Nursing ULE (1999-2006)

Scientific positions: Scientific Director INBIOTEC (2011-2016). AETOX Executive Member (2010-2017). President of the XXI National Congress of Toxicology AETOX 2015. President of the I Global Challenges in Neglected Tropical Diseases Meeting (GNTD), 2016.

Since his PhD in 1989, Dr. Balaña-Fouce has focused his research on the molecular basis of pharmacological treatment and MOLECULAR BIOLOGY of PARASITES responsible for human and animal diseases. During his post-doctoral stay at the Laboratory of Dr. Anthony E Pegg in PENNSTATE he investigated the potential of the polyamine metabolism as possible therapeutic target in kinetoplastids. He explored this metabolic route for more than 10 years in ULE and served to be invited by several European conferences (COST) in 1997 (Granada), 1999 (Hamburg) and 2007 (Stockholm). At the beginning 2000, I started to study DNA-



Topoisomerase I from *Leishmania* and apicomplexan parasites (*Cryptosporidium*), demonstrating the unique structural characteristics of this enzyme in trypanosomatids. Dr. Balana-Fouce has spent last 10 years in the molecular characterization of this enzyme and the screening of chemical compounds on it has allowed to give several national conferences in 2000 (AETOX, Murcia) and International conferences in 2007 (Frejus, France), 2008 (Norwich, UK) and 2014 (Málaga). Since 2013 it has incorporated tubulins into the chemical compound evaluation targets. Finally, since 2009, Dr. Balaña-Fouce is investigating MASSIVE SCREENING of chemical compounds in genetically modified pathogens to adapt them to HTS systems for bioimage techniques. As a consequence, he has been invited as speaker of the Zing Conference on Drug Discovery held in Nerja in 2014, León (2016) and San Juan (2018) in these last two cases as organizer of the 1st and 2nd Global Challenge for Neglected Tropical Diseases meeting. His group has been part of an "OpenLab" with GSK (Trescantos, Madrid). Since 2017 I am fully involved in the preparation of drug screening platforms for parasitic diseases, including GASTROINTESTINAL AND FREE-LIVING NEMATODES, participating in EU, MINECO and JCyL Projects regarding this topic.

Finally, as Scientific Director of the Biotechnology Institute of León (2011-2016), Rafael Balana-Fouce has collaborated with several companies of the Spanish business sector (Pascal Milk, Norel & Nature, Campofrío, Laboratorios Ovejero, Syva, etc ...) as well international Corporations (Sandoz) as well as in EU Projects of the FP7 and H2020 Program. He is Coordinator of the Consolidated Research Unit 108 (UIC108) of the Junta de Castilla y León since 2015.

Part C. RELEVANT MERITS (sorted by typology)

C.1. Publications (see instructions)

- Sepúlveda-Crespo D, Reguera RM, Rojo-Vázquez F, Balaña-Fouce R, Martínez-Valladares M. Drug discovery technologies: *Caenorhabditis elegans* as a model for anthelmintic therapeutics. *Med Res Rev.* 2020 Sep;40(5):1715-1753.
- Franch O, Gutiérrez-Corbo C, Domínguez-Asenjo B, et al. DNA flowerstructure co-localizes with human pathogens in infected macrophages. *Nucleic Acids Res.* 2020 Jun 19;48(11):6081-6091. 123:153-158.
- Cambra-Pellejà M, Gandasegui J, Balaña-Fouce R, Muñoz J, Martínez-Valladares M. Zoonotic Implications of *Onchocerca* Species on Human Health. *Pathogens.* 2020 Sep 17;9(9):761. doi: 10.3390/pathogens9090761.
- Gandasegui J, Martínez-Valladares M, Grau-Pujol B, Krolewiecki AJ, Balaña-Fouce R, Gelaye W, van Lieshout L, Kepha S, Mandomando I, Muñoz J Role of DNA-detection- based tools for monitoring the soil-transmitted helminth treatment response in drug- efficacy trials. *PLoS Negl Trop Dis.* 2020 Feb 6;14(2):e0007931.
- Escala N, Valderas-García E, Bardón MÁ, Gómez de Agüero VC, Escarcena R, López- Pérez JL, Rojo-Vázquez FA, San Feliciano A, Balaña-Fouce R, Martínez-Valladares M, Olmo ED. Synthesis, bioevaluation and docking studies of some 2-phenyl-1H- benzimidazole derivatives as anthelmintic agents against the nematode *Teladorsagia circumcincta*. *Eur J Med Chem.* 2020 Jul 7;208:112554.
- Martínez-Valladares M, Valderas-García E, Gandasegui J, Skuce P, Morrison A, Castilla Gómez de Agüero V, Cambra-Pellejà M, Balaña-Fouce R, Rojo-Vázquez FA. *Teladorsagia circumcincta* beta tubulin: the presence of the E198L polymorphism on its own is associated with benzimidazole resistance. *Parasit Vectors.* 2020 Sep 7;13(1):453. doi: 10.1186/s13071-020-04320-x.
- Balaña-Fouce R, Pérez Pertejo MY, Domínguez-Asenjo B, Gutiérrez-Corbo C, Reguera RM. Walking a tightrope: drug discovery in visceral leishmaniasis. *Drug Discov Today.* 2019 May;24(5):1209-1216.
- Tejería A, Pérez-Pertejo Y, Reguera RM, Carbajo-Andrés R, Balaña-Fouce R, Alonso C, Martín-Encinas E, Selas A, Rubiales G, Palacios F. Antileishmanial activity of new hybrid tetrahydroquinoline and quinoline derivatives with phosphorus substituents. *Eur J Med Chem.* 2019 Jan 15;162:18-31.
- Tejería A, Pérez-Pertejo Y, Reguera RM, Balaña-Fouce R, Alonso C, González M, Rubiales G, Palacios F. Substituted 1,5-naphthyridine derivatives as novel



antileishmanial agents. Synthesis and biological evaluation. Eur J Med Chem. 2018 May 25;152:137-147.

- Calvo-Álvarez E, Stamatakis K, Punzón C, Álvarez-Velilla R, Tejería A, Escudero-Martínez JM, Pérez-Pertejo Y, Fresno M, Balaña-Fouce R, Reguera RM. (2015) Infrared fluorescent imaging as a potent tool for in vitro, ex vivo and in vivo models of visceral leishmaniasis. PLoS Negl Trop Dis. 9:e0003666.

C.2. Research projects

- **Title:** Stopping Transmission Of intestinal Parasites (STOP); Universidad de León (ULE); IP: María Martínez Valladares; EU: EDCTP ISGlobal [RIA2017NCT-583 1845 (2019-2022) **Budget:** 274.361,44 euros
- **Title:** COST Action (European Cooperation in Science and Technology), “COMBAR” (Combatting anthelmintic resistance in ruminants). CA16230. Duration: 11/2017-10/2021. Budget (€): 444,000. Chair of the Action: Johannes Charlier (Belgium). Leader of the Spanish Management Committee and Short-Term Scientific Missions coordinator: María Martínez Valladares.
- **Title:** Control of ovine tricostrongilidosis: design, synthesis and clinical trials of efficacy of new anthelmintic action molecules. Universidad de León (ULE); IP: **Rafael Balaña Fouce** and María Martínez Valladares; MINECO AGL2016-79813-C2-1R (2016-2019) **Budget:** 100.000 euros
- **Title:** Evaluation of the anthelmintic activity of new molecules by in vitro assays against tricostrongilids Universidad de León (ULE); IP: **Rafael Balaña Fouce**; Junta de Castilla y León (LE020P17) (2017-2019) **Budget:** 120.000 euros
- **Title:** New biocoating for inhibition of corrosion in metal surfaces. INBIOTEC; Researchers: Ricardo Vicente; Ullán **Rafael Balaña Fouce**; Carlos Barreiro; Carlos García Estrada; Silvia Albillos; 7PM UE KBBE (BIOCORIN) 2012-2014; **Budget:** 430.000 euros
- **Title:** Real-time bioluminescent imaging applications in real time for drug development against Leishmania. Universidad de León (ULE); IP: **Rafael Balaña Fouce**; MINECO AGL 2010-16078 (2011-2013) **Budget:** 60.000 euros

C.3. Contracts, technological or transfer merits

- **Title of the contract:** Valoración de la citotoxicidad y respuesta inmune in vitro de antígenos vacunales
Role: Principal Investigator; no researchers: 5
Sponsor: Aquilón SL/ Universidad de León
Funding entity: UE (2020)
- **Title of the contract:** Estudio seguimiento de seguridad y eficacia de Fortimmune Bov.
Role: Principal Investigator; no researchers: 6 Sponsor: Laboratorios Ovejero/ Universidad de León Funding entity: JCyL (2018)
- **Title of the contract:** INPROCEPS
Role: Principal Investigator; no researchers: 6 Sponsor: Campofrío/ INBIOTEC
Funding entity: CDTI (2013-2015)
- **Title of the contract:** Nonspecific immunity stimulation test of the biological product Inmufort complex in bovine animals
Role: Principal Investigator; no researchers: 4
Sponsor: Laboratorios Ovejero, S.A./INBIOTEC
Funding entity: CDTI (2011-2013)
- **Title of the contract:** Nonspecific immunity stimulation test of the biological product Inmufort complex in porcine animals
Role: Principal Investigator; no researchers: 4 Sponsor: Laboratorios Ovejero, S.A. /INBIOTEC Funding entity: CDTI (2011-2013)
- **Title of the contract:** Functionality of Inactivated Probiotics Role: Principal Investigator; no researchers: 4



Sponsor: Leche Pascual SA. / INBIOTEC

Funding entity: CDTI (2011-2013)

- **Title of the contract:** Protection of derivatives of butyric acid in the control of avian salmonellosis
Role: Principal Investigator; no researchers: 3 Sponsor: Norel & Nature / Universidad de León Funding entity: CDTI (2010)

C.4. Patents

- **Title:** Gram-positive lactic acid bacterium of the genus *Lactobacillus casei*
Inventors: Ricardo Vicente Ullán; Silvia Albillos; Irene Santamarta Hernandez; Rafael Balaña Fouce; Carlos García Estrada
Owner: Pascual SA, Spain (2013)
- **Title:** Gram-positive lactic acid bacterium of the genus *Lactobacillus fermentum*
Inventors: Carlos García Estrada; Rafael Balaña Fouce; Ricardo Vicente Ullán; Silvia Albillos; Irene Santamarta Hernández
Owner: Pascual SA, Spain (2013)

C.5 Evaluation

- Expert Panel: H2020-MSCA-ITN-2015, Marie Skłodowska-Curie Actions, European Commission (2014 – 2018)
- Expert Panel; H2020-SC1-2018-Two-Stage_FirstStage-RTD. European Commission (2018)
- Expert Panel ACADEMIA en la Rama de Ciencias de la Salud (B6). ANECA; (2014-continúa)
- Expert de la Agencia Nacional de Evaluación y Prospectiva (ANEP)

C.6 Supervision de PhD Thesis

- Laura Calvo Álvarez. “Search for new feruloyl fungic esterases with biotechnological applications” Supervisors Rafael Balaña-Fouce, Ricardo Vicente Ullán and Carlos Barreiro Méndez. Faculty of Veterinary Sciences. University of Leon, Spain, December 15, 2018.
- Estefanía Calvo Alvarez. “Applications of biophotonics in the therapy of Leishmania” Supervisors: Rafael Balaña-Fouce, Rosa M. Reguera. Faculty of Biology, University of Leon, Spain. February, 2015.
- Prada CF, Alvarez-Velilla R, Balaña-Fouce R, Prieto C, Calvo-Álvarez E, Escudero-Martínez JM, Requena JM, Ordóñez C, Desideri A, Pérez-Pertejo Y, Reguera RM. Gimatecan and other camptothecin derivatives poison Leishmania DNA-topoisomerase IB leading to a strong leishmanicidal effect. *Biochem Pharmacol.* 2013 May 15;85(10):1433-40.

C.7 Organization of I+D meetings

- President of the XXI Congreso Nacional y V Iberoamericano de Toxicología León 2015
- President of the 1o Conference on Global Challenges in Neglected Tropical Diseases;
León 2016
- Member of the Organization Committee of 2o Conference Global Challenges in Neglected
Tropical Diseases; San Juan (Puerto Rico) 2018