MINISTERIO DE CIENCIA E INNOVACIÓN

Cofinanciado por la Unión Europea

AGENCIA ESTATAL DE INVESTIGACIÓN

CURRICULUM VITAE ABREVIADO (CVA)

***IMPORTANT** – The Curriculum Vitae cannot exceed 4 pages. Instructions to fill this document are available in the website.*

Part A. PERSONAL INFORMATION

First name	Helena		
Family name	Ostolaza Etxabe		
Gender (*)		Birth date (dd/mm/yyyy)	
Social Security, Passport, ID number			
e-mail	elenaamaya.ostolaza@ehu.eus	URL Web	
Open Researcher and Contributor ID (ORCID) (*)		**0000-0003-2933-9975**	

(*) Mandatory

A.1. Current position

Position	Full Professor			
Initial date	24/09/2020			
Institution	University of the Basque Country/Euskal Herriko Unibertsitatea (UPV/EHU)			
Department/Center	Biochemistry and Molecular Biology	Faculty of Sciences and Technology		
Country	Spain		Teleph. number	+34-946018164
Key words	Lipid-protein interactions in biomembranes, membrane proteins, bacterial toxins, cell membranes, model membranes			

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

Period	Position/Institution/Country/Interruption cause
24/09/2021-	Full Professor/ Universidad del País Vasco/Euskal Herriko Unibertsitatea/España
21/11/1999- 24/09/2021	Senior Lecturer/ Universidad del País Vasco/Euskal Herriko Unibertsitatea/España
01/10/1997-21/11/1999	Lecturer/ Universidad del País Vasco/Euskal Herriko Unibertsitatea/España
16/10/1996-31/07/1997	Associate Lecturer/ Universidad del País Vasco/Euskal Herriko Unibertsitatea/España
30/06/1993-16/10/1996	Postdoctoral Research Associate/ Universidad del País Vasco/Euskal Herriko Unibertsitatea/España
02/01/1993-30/06/1993	Postdoctoral Research Associate/ University of Cambridge/United Kingdom
01/10/1987-24/07/1992	Predoctoral Fellow (MEC and GV Grants)/ Universidad del País Vasco/Euskal Herriko Unibertsitatea/España

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Licensed in Biology (Biochemistry)	Universidad del País Vasco/Euskal Herriko Unibertsitatea	1987
PhD in Biology	Universidad del País Vasco/Euskal Herriko Unibertsitatea	1992

(Include all the necessary rows)

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

Helena Ostolaza (IP). Doctorate in Biology (UPV / EHU) in 1992. She did a postdoctoral stay in the Department of Pathology at the Cambridge University (UK) during 1993. *Lecturer* (1996-98), appointed *Associate Professor* at the UPV / EHU (1999-2021) and *Full Professor* at the same University in September 2020. It is part of the now called "Biofisika Institute", a mixed CSIC-UPV / EHU center since its foundation in 2002. Her scientific career began more than 25 years ago with the biophysical study of lipid-protein interactions and structure-function relationships of protein toxins secreted by pathogenic bacteria. Dr. Ostolaza has extensive experience in the use of biophysical techniques (calorimetry, FTIR, fluorescence, confocal microscopy, AFM, CD). During the initial stage of her research career, Dr. Ostolaza collaborated with Dr. F.M. Goñi, characterizing the mechanism of action of the *E. coli* haemolysin toxin. The investigations carried out during this stage led to important achievements, publishing, for the first time, the existence of a protein receptor for the toxin in human erythrocytes. This work gave rise to 19 publications, all of them in journals of the Q1 quartile. Part of this work also materialized in a patent and numerous communications to International Congresses. Subsequently, within the framework of a European Project (5th Framework Program), Dr. Ostolaza began the study of the mechanism of action of adenylate cyclase toxin (ACT) from *B pertussis*, in collaboration with the group of Dr. Sebo (Czech Republic). Among the major achievements of this research are, the finding of a new enzymatic activity in ACT, a phospholipase A activity, and the finding that ACT promotes the invasion of bacteria in non-phagocytic cells, thus serving as an invasion factor that could protect the bacteria from the immune system. More recently, the group of Dr Ostolaza has published what are arguable the first nanoscale pictures of an oligomeric lytic pore formed by a RTX toxin, namely ACT toxin. The set of results obtained with this toxin has led to a European patent, numerous communications to International Congresses and 18 publications, all of them in journals of the first quartile. Dr. Ostolaza maintains a collaboration with Dr. César Martín (UPV / EHU) that began a decade ago studying familial hypercholesterolemia (FH) and the search for new forms of early diagnosis. An important aspect of this line of research is the search for new therapies against FH, and it is in this section where Drs Martín and Ostolaza began the study of lipoproteins and the development of multifunctional nanoparticles based on HDL mimetics as a possible anti-inflammatory and cholesterogenic.tool. As result of this collaboration, the two researchers have jointly published more than a dozen articles in international journals. Dr Ostolaza has participated in more than fifty competitive research projects, either as principal investigator, or as research collaborator. She has collaborated with several international research groups from institutions such as the Pasteur Institute (Drs Chenal and Ladant), the Czech Academy of Sciences (Dr Peter Sebo) or the Argentine center Conycet (Dr Laura Bakás). Dr. Ostolaza is the author or co-author of 54 scientific publications in international journals of the first quartile, has an h index = 26 and an average of about 50 cites/year. Dr Ostolaza is also broadly experienced in activities of technology and innovation development being the holder of three national and international patents, research collaborator of an INNPACTO project and principal investigator or research collaborator of several research projects with the private industry. She has been recognized for five six-year research periods (2014-2019 last period) and one six-year transfer period by the CNEAI. Dr Ostolaza has supervised seven Doctorate Thesis and numerous Master and Degree Diploma studies, and some of her former students are now leaders of their own research groups in prestigious technology centers such as CICBiomagune in San Sebastian, or associate lecturers at the UPV/EHU. Dr Ostolaza has been appointed *ad hoc* peer reviewer of numerous journals such as Scientific Reports, J Biol Chem, Plos Pathogens, Biochemistry, Nature… and evaluator of research projects for several national or international research institutions (ANEP, Czech Academy of Sciences, CONYCET, France ANR, etc.) as well as evaluator for six-year research periods for the ANECA-CNEAI agency.

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

C.1. Publications *(see instructions)*

1. Amuategi, J., Alonso, R., **Ostolaza, H**. **2022.** Four Cholesterol-Recognition Motifs in the Pore-Forming and Translocation Domains of Adenylate Cyclase Toxin Are Essential for Invasion of Eukaryotic Cells and Lysis of Erythrocytes. *International Journal of Molecular Science*s, 23(15), 8703. I.F.: 6.028; JCR: 69/297 **Q1**

2. Jebari-Benslaiman, S., Uribe, K.B., Benito-Vicente, A., Galicia-García, U., Larrea-Sebal, A., Santín, I., Alloza, I., Vandenbroeck, K., **Ostolaza**, **H**., Martín, C. **2022**. Boosting Cholesterol Efflux from Foam Cells by Sequential Administration of rHDL to Deliver MicroRNA and to Remove Cholesterol in a Triple-Cell 2D Atherosclerosis Model. *Small*, 18(13), 2105915 I.F.: 15.153; JCR: 32/414, **D1.**

3.González-Bullón D., Uribe, K. B., Amuategi, J., Martín, C. , **Ostolaza H**. **2021** Cholesterol stimulates the lytic activity of Adenylate Cyclase Toxin on lipid membranes by promoting toxin oligomerization and formation of pores with a greater effective size. *FEBS Journal* 288 (23): 6795-6814. doi.org/10.1111/febs.16107 I.F: 5.622; JCR: 72/295; QC: **Q1**.

4. **Ostolaza, H**, González-Bullón, D., Uribe, K.B., Largo, E., ...Martín, C., . **2019** Membrane permeabilization by pore-forming RTX toxins: What kind of lesions do these toxins form? *Toxins* 11(6): 354. I.F.: 3.531; JCR: 58/298; QC: **Q1** (Health, Toxicology and Mutagenesis).

5. González-Bullón D, Uribe KB, Martín C, **Ostolaza H**. **2017** Phospholipasa A activity of Adenylate Cyclase Toxin mediates translocation of its catalytic domain. *Proc. Natl. Acad. Sci.* USA. 114(33), pp. E6784–E6793. I.F. 9.961; JRC: 4/64; QC: **D1.**

6. Martín C, Etxaniz A, Uribe KB, Etxebarria A, González-Bullón D, Arlucea J, Goñi FM, Aréchaga J, **Ostolaza H**. **2015.** Adenylate Cyclase Toxin promotes bacterial internalisation into non-phagocytic cells. *Sci Rep*. 5: 13774. doi: 10.1038/srep13774. I.F. 5,578; JRC: 5/57; QC: **Q1, D1.**

7. Uribe, K.B., Etxebarria, A., Martín, C., **Ostolaza, H**. **2013**. Calpain-Mediated Processing of Adenylate Cyclase Toxin Generates a Cytosolic Soluble Catalytically Active N-Terminal Domain. *PLoS ONE*, 8(6), e67648 I.F: 3.752; JCR: 8/55; QC: **Q1.**

8. Martin, C., Gómez-Bilbao, G., **Ostolaza, H**. **2010**. *Bordetella* adenylate cyclase toxin promotes calcium entry into both $CD11b^+$ and $CD11b^-$cells through cAMP-dependent L-type-like calcium channels. *Journal of Biological Chemistry* 285(1), 357–364. I.F:5.485; JCR: 50/286; QC: **Q1.**

9. Cortajarena, A.L., Goñi, F.M., **Ostolaza, H**. **2003**. A receptor-binding region in *Escherichia coli* α-haemolysin. *Journal of Biological Chemistry* 278(21), 19159–19163. I.F: 5.485; JCR: 50/286; QC: **Q1.**

10. Cortajarena, A.L., Goñi, F.M., **Ostolaza, H**. **2001**. Glycophorin as a Receptor for *Escherichia coli* α-Hemolysin in Erythrocytes. Journal of Biological Chemistry 276(16), 12513–12519. I.F: 5.485; JCR: 40/263; QC: **Q1.**

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

Dr. Ostolaza has participated during the last ten years in more than 30 International and National Congresses, in which she has presented more than 30 communications (posters) and several invited presentations.

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. Reference: **BFU 2017-82758-P (AEI/FEDER, UE)**. Title: Biophysical study of the mechanism of translocation across membranes of the adenylate cyclase toxin from Bordetella

pertussis. Financial entity and Call: MINECO, Grants for carrying out research projects, non-oriented fundamental research projects subprogram; call 2017. Name of Principal Investigator and affiliation entity: Helena Ostolaza (Instituto Biofisika and Universidad del País Vasco). Start date: 1/01/2018. Ending date: 30/09/2021. Financing: 101.035€. Type of participation: Principal Investigator.

2. Reference: **BFU 2012-36241**. Title: Membrane proteins: many unanswered questions. Financial entity and Call: MINECO, Grants for carrying out research projects, non-oriented fundamental research projects subprogram. Call: 2012. Name of Principal Investigator and affiliation entity: Félix M. Goñi (Universidad del País Vasco). Start date: 2012. Ending date: 2015. Financing: 168.000€. Type of participation: Investigator.

3. Reference: **IT849-13**. Title: Lipid-protein interactions in biological membranes*:* towards membrane proteomics. Financial entity and Call: Basque Government, Grants to support the activities of research groups of the Basque University System. Call: 2012; Name of Principal Investigator and affiliation entity: Félix M. Goñi (Universidad del País Vasco). Start date: 2012. Ending date: 2018. Financing: 544.799€. Type of participation: Investigator.

4. Reference: **BFU 2007-62062**. Title: From membrane proteins to membrane proteomics. Financial entity and Call: MEC National Plan for Scientific Research, Development and Technological Innovation. Name of Principal Investigator and affiliation entity: Félix M. Goñi (Universidad del País Vasco). Start date: 2007. Ending date: 2012. Financing: 534.820€. Type of participation: Investigator.

5. Reference: **GIU06/42**. Title: *Estructura y dinámica de las membranas biológicas.* Financial entity and Call: Basque Government, Grants to support the activities of research groups of the Basque University System. Call: 2007; Name of Principal Investigator and affiliation entity: Félix M. Goñi (Universidad del País Vasco). Start date: 2007. Ending date: 2012. Financing: 553.625,99€. Type of participation: Investigator.

C.4. Contracts, technological or transfer merits, Include patents and other industrial or intellectual property activities (contracts, licenses, agreements, etc.) in which you have collaborated. Indicate: a) the order of signature of authors; b) reference; c) title; d) priority countries; e) date; f) Entity and companies that exploit the patent or similar information, if any.

1. Title: Functional validation of the pathogenicity of mutations in the LDL receptor as a basis for an accurate diagnosis of familial hypercholesterolemia. Financial entity and Call: Basque Government, Research Projects and Technological Innovation, Plan Euskadi 09. Enterprise: Progenika. Name of Principal Investigator and affiliation entity: César Martín (Universidad del País Vasco). Dates: 2010-2011. Financing: 50.000€. Type of participation: Investigator.

2. Title: LipoUniversal: Universal platform for the diagnosis of familial hypercholesterolemia. Financing entity: MICINN (Ministerio de Ciencia e Innovación), National Program for Public-Private Cooperation, INNPACTO Subprogram 2011. Name of Principal Investigator and affiliation entity: César Martín (Universidad del País Vasco). Start date: 2011. Ending date: 2014. Financing: 570.000€. Type of participation: Investigator.

Patents

Authors: H. Ostolaza, C. Martín, F.M. Goñi. Reference: EP2172562 (A2) Title: “Method for the internalization of non-invasive bacteria into eukaryote cells”. Priority Countries: All in Europe. Date: 2010/04/07.