



## CURRICULUM VITAE (CVA)

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

Part A. PERSONAL INFORMATION			CV date	26-10-2023
First name	Miren Pilare			
Family name	Cajaraville Bereciartua			
Gender (*)	Female	Birth date (dd/mm/yyyy)	30-07-1964	
Social Security, Passport, ID number	15.971.355-V			
e-mail	Mirenp.cajaraville@ehu.eus	URL	Web: <a href="http://www.ehu.eus/web/cellbiologyinenvironmental toxicology">www.ehu.eus/web/cellbiologyinenvironmental toxicology</a>	
Open Researcher and Contributor ID (ORCID) (*)		I-4757-2015	0000-0001-6527-6137	

(\*) Mandatory

### A.1. Current position

Position	Full Professor (Catedrática de Universidad)		
Initial date	19/10/2002		
Institution	Universidad del País Vasco/Euskal Herriko Unibertsitatea UPV/EHU		
Department/Center	Zoology and Animal Cell Biology	Fac. of Science and Technology / Plentzia Marine Station (PiE)	
Country	Spain	Teleph. number	946012697
Key words	Cell and molecular biology, aquatic toxicology, biomarkers, histopathology and cell pathology, omics, AOPs, human and environmental risk assessment, alternative methods-NAMs, <i>in vitro</i> toxicity testing, PAHs and oil pollution, endocrine disruption, nanotoxicology, micro and nanoplastics		

### A.2. Previous positions (research activity interruptions, art. 14.2.b))

Period	Position/Institution/Country/Interruption cause
1988-1990	Predocctoral grant, UPV/EHU
1990-1993	Associate professor (profesora asociada), UPV/EHU
1993-1996, 1996-2002	Professor (profesora titular interina, prof titular), UPV/EHU

### A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Licenciature (BSc) Biology (Biochemistry)	UPV/EHU	1987
Degree (MSc) Biology	UPV/EHU	1987
PhD Biology	UPV/EHU	1991

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

Full Professor in Cell Biology at the University of the Basque Country since 2002. Positive evaluation of **5 research periods** (sexenios), 1988-2017. **Advanced award 2021** for an entire research career granted by the Department of Education of the Basque Government and Ikerbasque. Highly cited author award 2005-2009 in the journal Marine Pollution Bulletin and 2007-2010 in Environmental Pollution. 2013/2014 top cited article and top downloaded article in the journal Ecotoxicology. 2014-2017 highly cited article in the journal Aquatic Toxicology. **World's top 2% scientist** according to *Ranking of the*



World Scientists (Ioannidis, Boyack & Baas, ["Updated science-wide author databases of standardized citation indicators"](#) (Elsevier, August 2021). Same in 2022 and 2023. [October 2023 data-update for "Updated science-wide author databases of standardized citation indicators"](#), John P. A. Ioannidis (Stanford University), Elsevier Data Repository, DOI: 10.17632/btchxktzyw.6

PhD at the University of the Basque Country (1991) on the "Cytotoxic and histopathological effects of petroleum derived hydrocarbons on mussels". Her teaching and research activity has been developed both at the Science and Technology Faculty (1984-1990 and from 1996 up to now) and at the Faculty of Medicine and Dentistry (1990-1996) of the University of the Basque Country. She has carried out research stays at the University of Wales (Aberystwyth, UK, 1988), University of Heidelberg (Germany, 1992), King's College School of Medicine and Dentistry (London, UK, 1993), the University of California at San Diego (USA, 2000) and University of Hong Kong (China, 2013). She collaborates with a wide network of professors and researchers all around the world.

She has organized the international postgraduate courses "Cell Biology in Environmental Toxicology" (biannually from 1994 to 2006) and "Cellular and Molecular Biomarkers" since 2006. She teaches in the Masters Environmental Contamination and Toxicology (ECT), Erasmus Mundus in Marine Environment and Resources (MER+), Erasmus Mundus in Marine Biological Resources (IMBRSea) and Erasmus Mundus in Environmental Contamination and Toxicology (ECT+). Member of the Academic Commission of the Master ECT. Coordinator of the PhD programme in ECT since 2012. She has supervised 17 Licenciature Thesis, 4 End of Degree Projects, 22 Master Thesis and 17 PhD Thesis of which 13 were European or International Thesis and 1 received the extraordinary award. Actually she is supervising 1 PhD student.

She is author of 2 text books and 10 divulgative articles. Editor of 1 book and 3 special issues, and has published 20 book chapters and 184 research articles and reviews in peer-reviewed international journals, in addition to several reports for the administration. Quality indicators (Web of Science): Total listed publications: 203; most publications in Q1; total citations: 7.668 and without self citation 6.570; average citation per publication: 37,77; **h index 51**. Has presented 76 contributions to national congresses (15 invited) and about 328 contributions to international congresses (23 invited). Member of the Organizing Committee of 10 congresses and meetings, and member of the Scientific Committee of 23 international congresses. Invited conferences at the University College of Wales (1988), King's College School of Medicine and Dentistry of London (1993), Universidade dos Açores (1994), University of Thessaloniki (1999), University of Maryland (2000), Universidade di Padova (2004), Universidade do Algarve (2005), IRIS Akvamiljo Marine Research Center, Stavanger, Norway (2006), Centro de Recursos Medioambientales, Donostia/San Sebastian (2009), University of Hong Kong and SKLMP-MEL Academic Committee, Shenzhen (2013).

She has participated in 10 contracts with administrations and companies (6 as principal investigator) and in 74 competitive research projects (32 as principal investigator) funded by the University of the Basque Country, Basque Government, Spanish Ministries of Education and Science, Science and Technology, Environment, and Economy and Competitiveness (MINECO), and EU FPs. She has participated in the **EU projects** XENOFISH (IV FP, FAIR, 1998-2000), BEEP (V FP, Environmental Programme-Marine Ecosystems, 2001-2004), PRAGMA (VI FP, Environment DG, 2006-2007) and NANORETOX (VII FP, NMP-Nanosciences, Nanotechnologies, Materials and new Production Technologies, 2008-2012). In the last years, she led a project of the MINECO (NANOSILVEROMICS, 2013-2015) on the mechanisms of action and toxicity of silver nanoparticles in model aquatic and terrestrial organisms using omics technologies. She also participated in the project NANOGUNE EHS ADVANCE (2014-2015) on the toxicity of graphene nanomaterials, funded by the Basque Government ETORTEK programme; and the project POLARISATION (2013-2015) on polar cod, lipid metabolism and disruption by polycyclic aromatic hydrocarbons, funded by the Research Council of Norway. Participated in the EU COST Action ES1205 ENTER (2013-2017) on the transfer of engineered nanomaterials from wastewater treatment and stormwater to rivers. She also participated in the PLASTOX project (JPI Oceans, 2016-2019) on the direct and indirect ecotoxicological impacts of microplastics on marine organisms and the GRACE project (H2020, 2016-2019) on integrated oil spill response actions and environmental effects. Member of the MINECO funded National Network of Excellence in Nanotechnology and Food (2017-2019). She led a MINECO-Retos project (2016-2021) on nanomaterials as carriers of persistent organic pollutants in the aquatic environment: development of tools for risk assessment based on alternative methods and model organisms. She also led the collaborative NANOPHOTOTOX project on novel nanodrugs for photodynamic therapy of cancer: physico-chemical and toxicological characterization (2019-2020). Most recently, Prof. Cajaraville holds an **expert grant from the European Commission-** Joint Research Centre (JRC/A/05) with respect to the Centre for Advanced Studies (CAS) project "H2020 CAS6: Towards a technological platform for NP detection" (2020-2023). In addition, within this CAS6 project the research team has participated in three Service Contracts aiming to provide biological samples (algae, mussels, copepods) exposed to nanoplastics and transfer of protocols. She also coordinates the project MIKRONANOPLAS "Microplastics in molluscs and fish of the Basque Country of interest for human consumption" funded by the Dept. of Economic Development, Sustainability and Environment of the Basque Government (2022-



2023) and the project PLASFITO “Fate and effect of the microplastics, nanoplastics and additives coming from the degradation of fishing gears during their life cycle. Study in the Bay of Biscay” funded by the Euskampus Missions, UPV/EHU (2022-2023) and the region of Nouvelle Aquitaine. Finally, she leads the project FIERA “Fate and Impact of Environmentally ReAlistic nanoplastics and of novel bioplastics in the aquatic environment” funded by the MICIN for the period 2022-2025. Participates in 2 national patents.

Has evaluated manuscripts for more than 40 journals. Referee for the Spanish, French, Portuguese, Italian, Belgian, UK, USA and Argentinian Agencies for Evaluation of Research Projects. 4D Expert for the evaluation of R+D+i projects. **Member of European Research Council ERC** evaluation panel (LS9-Applied Life Sciences and Non-Medical Biotechnology, later LS9- Biotechnology and Biosystems Engineering) since 2016 up to 2023.

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

### **C.1. Publications (including books): a selection of most recent**

Fate and effects of graphene oxide alone and with sorbed benzo(a)pyrene in mussels *Mytilus galloprovincialis*. GONZÁLEZ-SOTO, N; BLASCO, N; IRAZOLA, M; BILBAO, E; GUILHERMINO, L; CAJARAVILLE, MP. Journal of Hazardous Materials, Jun 15;452:131280. doi: 10.1016/j.jhazmat.2023.131280. (2023).

Chapter 7: Assessing adverse effects of legacy and emerging contaminants in fish using biomarker analysis and histopathology in active monitoring scenarios. ORBEA, A; BILBAO, E; CAJARAVILLE, MP. In: In situ Bioavailability and Toxicity. T-B SEILER, M BRINKMANN (eds), Springer Protocols Series "Methods in Pharmacology and Toxicology", Springer Science+Business Media, pp (2022).

Chapter 7: A life cycle perspective of the exposure to airborne nanoparticles released from nanotechnology enabled products and applications. BLÁZQUEZ SÁNCHEZ, M; FITO-LÓPEZ, C; CAJARAVILLE, MP. In: Health and Environmental Safety of Nanomaterials. 2nd edition. J NJUGUNA, K PIELICHOWSKI, H ZHU (eds), Elsevier, Duxford, Cambridge, Kidlington, pp 173-194. ISBN 978-0-12-820505-1 (print), 978-0-12-820510-5 (online) (2021).

Polystyrene nanoplastics and microplastics can act as Trojan horse carriers of benzo(a)pyrene to mussel hemocytes *in vitro*. KATSUMITI, A; LOSADA-CARRILLO, MP; BARROS, M; CAJARAVILLE, MP. Scientific Reports, 11: 22396. <https://doi.org/10.1038/s41598-021-01938-4> (2021).

Particle emission measurements in three scenarios of mechanical degradation of polypropylene-nanoclay nanocomposites. BLAZQUEZ, M; MARCHANTE, V; GENDRE, L; STAROST, K; NJUGUNA, J; SCHUTZ, JA; LACAVE, JM; EGIZABAL, A; ELIZETXEA, C; CAJARAVILLE, MP. Journal of Aerosol Science, 150: 105629 (2020).

Functionalized fluorescent silica nanoparticles for bioimaging of cancer cells. PRIETO-MONTERO, R; KATSUMITI, A; CAJARAVILLE, MP; LÓPEZ ARBELOA, I; MARTÍNEZ-MARTÍNEZ, V. Sensors, 20: 5590, 15 pages (2020).

Immortalisation of primary human alveolar epithelial lung cells using a non-viral vector to study respiratory bioreactivity *in vitro*. KATSUMITI, A; RUENRAROENGSAK, P; CAJARAVILLE, MP; THORLEY, AJ; TETLEY, TD. Scientific Reports, 10.20486 (2020).

Bioaccumulation, cellular and molecular effects in adult zebrafish under exposure to cadmium sulphide nanoparticles and to ionic cadmium. LACAVE, JM; BILBAO, E; GILLILAND, D; MURA, F; DINI, L; CAJARAVILLE, MP; ORBEA, A. Chemosphere, 238: 124588 (1-12) (2020).

Impacts of dietary exposure to different sized polystyrene microplastics alone and with sorbed benzo[a]pyrene on biomarkers and whole organism responses in mussels *Mytilus galloprovincialis*. GONZÁLEZ-SOTO, N; HATFIELD, J; KATSUMITI, A; DUROUDIER, N; LACAVE, JM; BILBAO, E; ORBEA, A; NAVARRO, E; CAJARAVILLE, MP. Science of the Total Environment, 684: 548-566 (2019).

Chapter 3: *In vitro* toxicity testing with bivalve mollusc and fish cells for the risk assessment of nanoparticles in the aquatic environment. KATSUMITI, A; CAJARAVILLE, MP. In: Ecotoxicology of Nanoparticles in Aquatic Systems. J BLASCO, I CORSI (eds), Science Publishers CRC Press/ Taylor & Francis Group, Boca Raton, London, New York, pp 62-98, ISBN 9781138067264 (2019).

Changes in protein expression in mussels *Mytilus galloprovincialis* dietarily exposed to PVP/PEI coated silver nanoparticles at different seasons. DUROUDIER, N; CARDOSO, C; MEHENNAOUI, K; MIKOLACZYK, M; SCHÄFER, J; GUTLEB, AC; GIAMBERINI, L; BEBIANNO, MJ, BILBAO, E; CAJARAVILLE, MP. Aquatic Toxicology, 210: 56-68 (2019).

Assessment of the effects of discontinuous sources of contamination through biomarker analyses on caged mussels. DE LOS RÍOS, A; ECHAVARRI-ERASUN, B; DÉVIER, MH; LE MENACH, K; BUDZINSKI, H; ORTIZ-ZARRAGOITIA, M; ORBEA, A; JUANES, JA; CAJARAVILLE, MP. Science of the Total Environment, 634: 116-126 (2018).

Health status of the Bilbao estuary: a review of data from a multidisciplinary approach. CAJARAVILLE, MP; ORIVE, E; VILLATE, F; LAZA-MARTÍNEZ, A; URIARTE, I; GARMENDIA, L; ORTIZ-ZARRAGOITIA, M; SEOANE, S; IRIARTE, A; MARIGÓMEZ, I. Estuarine, Coastal and Shelf Science, 179: 124-134 (2016).



Mechanisms of toxicity of Ag nanoparticles in comparison to bulk and ionic Ag on mussel hemocytes and gill cells. KATSUMITI, A; GILLILAND, D; AROSTEGUI, I; CAJARAVILLE, MP. PLOS ONE, 10(6): e0129039. doi: 10.1371/journal.pone.0129039, pages 1-30 (2015).

## C.2. Congress: a selection of most recent invited

Preliminary studies on the risks posed by micro and nanoplastics on human health through fish and shellfish consumption. Xth Meeting of the Spanish Network of Nanotechnology in Food, AESAN, Madrid, 2023. (Invited).

Co-organization of session “Alternative methods for Nanosafety assessment in the aquatic environment” and 2 oral presentations. 31st ANNUAL MEETING OF THE SOCIETY OF ENVIRONMENTAL TOXICOLOGY AND CHEMISTRY (SETAC)-EUROPE, virtual, 2021.

Environmental impact of metal-bearing nanoparticles and graphene family nanomaterials. NANOSPAIN CONFERENCE, Barcelona, 2019. (Invited)

Internalization and toxicity of graphene nanomaterials using an in vitro approach. 31st CONGRESS OF THE NEW EUROPEAN SOCIETY FOR COMPARATIVE PHYSIOLOGY AND BIOCHEMISTRY ESCPB Porto, 2018. (Session opening lecture)

Aplicación de metodologías alternativas como herramientas complementarias para la Evaluación del Riesgo Ambiental (ERA) de los nanomateriales. 2nd INTERNATIONAL CONGRESS OF NANOSCIENCE AND NANOTECHNOLOGY, Quito (Ecuador), 2015. (Invited)

An integrated multispecies two-tiered approach for the environmental risk assessment of nanomaterials: a case study with Ag NPs. NANOSPAIN-TOXICOLOGY CONFERENCE, IMAGINENANO, Bilbao, 2015. (Keynote speaker)

## C.3. Research projects: a selection of most recent

Fate and Impact of Environmentally ReAlistic nanoplastics and of novel bioplastics in the aquatic environment - FIERA. Participation: Principal Researcher. Funding organization: MICIN. Ref: PID2021-128600OB-I00. Duration: 01-01-2022/31-12-2025. Funding: 294.030 €.

Fate and effect of the microplastics, nanoplastics and additives coming from the degradation of fishing gears during their life cycle. Study in the Bay of Biscay - PLASFITO. Participation: Principal Researcher. Funding organization: Euskampus Foundation. Ref: EUSK22/03. Duration: 01-01-2022/31-12-2023. Funding: 13.175 €.

Evaluación de microplásticos en moluscos y peces del País Vasco de interés para el consumo humano - MIKRONANOPLAS. Participation: Principal Researcher. Funding organization: Basque Gov. Ref: PA22/01. Duration: 01-01-2022/31-12-2023. Funding: 40.100 €.

Novel nanodrugs for photodynamic therapy of cancer: physico-chemical and toxicological characterization - NANOPHOTOTOX. Participation: Principal Researcher. Funding organization: UPV/EHU. Ref: COLAB19/01. Duration: 01/01/2020 to 31/12/2021. Funding: 21.300 €.

Cell Biology in Environmental Toxicology, grant to consolidated research group. Participation: Principal Researcher. Funding organization: Basque Government Education Department. Ref: GIC19/IT-1302-19. Duration: 01/01/2019 to 31/12/2021. Funding: 347.000 €.

Nanomaterials as carriers of persistent organic pollutants in the aquatic environment: development of tools for risk assessment based on alternative methods and model organisms – NACE. Participation: Principal Researcher. Funding organization: MINECO, Retos 2016, Ref: CTM2016-81130-R. Duration: 30/12/2016 to 29/06/2021. Funding: 237.160 € + predoctoral contract.

National Network of Excellence in Nanotechnology and Food – (Food)E-9. Participation: Researcher. Funding organization: MINECO, Redes, Ref: AGL2016-81993-REDT. Duration: 01/07/2017 to 30/06/2019. Funding: 20.000 €

Integrated oil spill response actions and environmental effects – GRACE. Participation: Researcher. Funding organization: European Commission H2020. Work programme topic BG-07-2015. Duration: 01/01/2016 to 31/12/2018. Funding: 325.000,00 €

Direct and indirect ecotoxicological impacts of microplastics on marine organisms – PLASTOX, Participation: Researcher. Funding organization: JPI Oceans. Duration: 01/01/2016 to 31/12/2018. Funding: in kind contribution and Grant from Research Vicerectorate 12.000 €

The transfer of engineered NanoMaterials (ENMs) from wastewater treatment and stormwater to rivers – ENTER. Ref: COST Action ES1205. Participation: Researcher. Funding organization: European Cooperation in Science and Technology COST, EU RTD Framework Programme. Duration: 05/04/2013 to 04/04/2017. Funding: mobility.

The reactivity and toxicity of engineered nanoparticles: risks to the environment and human health – NanoReTox. Ref: CP-FP 214478-2. Participation: Principal Researcher (Subproject UPV/EHU). Funding organization: EU VII Framework Programme, FP7-NMP-2007-SMALL-1, NMP-Nanosciences, Nanotechnologies, Materials and new Production Technologies, Collaborative project. Duration: 01/12/2008 to 31-11-2012. Funding: 278.629 € (Subproject UPV/EHU)

## C.4. Contracts, technological or transfer merits





Request for purchasing of biological samples exposed to nanoplastics and transfer of culture protocols in the frame of CAS6 Project. Contractor: European Commission, Joint Research Centre, Service contracts JRC/IPR/2021/VLVP/2824. Duration: 2021-2023. Funding: 45.000 €.

Towards a technological platform for nanoplastics detection. Contractor: European Commission, Joint Research Centre for the Centre for Advanced Studies (CAS) project "H2020 CAS6 Nanoplastics", Expert contract CT-EX2016D277238-104. Duration: 2020-2023. Funding: 33.000 €

Estudio del estado ecológico del entorno de la descarga en Punta Lucero. Contractor: Petronor. Contract ref: C2002/0165. Participation: Researcher. Duration: 2002 up to date. Funding: 160.000 €

Utilización de biomarcadores para el establecimiento de criterios para la valoración de la vulnerabilidad de las masas de agua sometidas a vertidos urbanos e industriales- BIOVULMA. Contractor: Instituto de Hidráulica Ambiental IH-Cantabria. Participation: Principal Researcher. Duration: 2011-2012. Funding: 18.009,57 €

Pollution monitoring and ecological impact assessment following accidental oil and other chemical spills in marine waters. Contractor: Cedre (Centre de documentation de Recherche et d'experimentations sur les pollutions accidentelles des eaux) for EU grant agreement n°07.030900/2006/448297/SUB/A3. Participation: Principal Researcher. Duration: 2007. Funding: 2.000 €

Seguimiento de los efectos del vertido del "Prestige" en las islas Cíes y Ons mediante el uso de biomarcadores tempranos de contaminación. Contractor: Centro de Investigaciones Submarinas CIS, s.l. Contract ref: P229. Participation: Principal Researcher. Duration: 2004-2006. Funding: 58.464 €

Water column monitoring in the North sea-WCM2004. Contractor: Norwegian Institute for Water Research (NIVA), Norway. Participation: Researcher. Duration: 2004. Funding: 7.725,39 €

### **C.5. Other merits (e. g., Institutional responsibilities, memberships of sci societies...)**

Founding member (2012) and member of the Government Council, Research Commission and Academic Commission of the Research Center for Marine Experimental Biology and Biotechnology, Plentziako Itsas Estazioa PiE-UPV/EHU since 2017 up to now.

Director of the Unit of Formation and Research UFI "Protection of Ecosystem Health" in the period 2012-2016.

Director of the consolidated research group BCTA "Cell Biology in Environmental Toxicology" recognized by the University of the Basque Country and Basque Government after evaluation at the national level, *since* 2001 up to 2022.

Director of the Department of Zoology and Animal Cell Biology in the period 2013-2017.

Director of Postgraduate Studies and Life Long Learning (2010-2011) and Director of the first Masters and Doctoral School (2012) of the University of the Basque Country.

Member of the steering Committee (2007-2009) and Executive board (since 2009) of the European Society for Comparative Physiology and Biochemistry ESCPB and president of ESCPB in the period 2011-2012.

Expert of the Experimental Sciences Committee of the Basque Quality Evaluation Agency UNIQUAL-UNIBASQ (2010-2011).

Founding Council member of the Iberoamerican Society on Environmental Contamination and Toxicology SICTA, the Spanish working group on Endocrine Disruption, and the Spanish DareNet network for the promotion of zebrafish in research.