



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

(*) Mandatory

CV date	11/06/2024
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A.1. Current position

Position	Full Professor Biochemistry and Molecular Biology		
Initial date	06/2021		
Institution	University of Santiago de Compostela		
Department/Center	Centro Singular de Investigación en Química Biolóxica e Materiais Moleculares (CIQUS) and Departamento de Bioquímica e Bioloxía Molecular		
Country	Spain	Teleph. number	(+34) 881815732
Key words	Reovirus, virus, molecular biology, biotechnology, vaccines, protein expression, enzyme engineering, biological chemistry		

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

Period	Position/Institution/Country/Interruption cause
12/2003-06/2024	As Professor/USC-Biochemistry and Mol. Biol./Spain
10/1998-06/2003	Asistant Professor/USC-Biochemistry and Mol. Biol./Spain
08/1996-10/1998	Contrato de Reincorporación Doctores y Tecnólogos/USC-Biochemistry and Mol. Biol./Spain
01/1994-08/1996	Postdoctoral Research Assistant/Univ. Oxford/UK

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
PhD in Biochemistry and Mol. Biology	University of Santiago de Compostela/Spain	1993
Licensed in Biology (Mol. Biol.)	University of Santiago de Compostela/Spain	1986

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

Biographical sketch- I hold a degree in Biology from the University of Santiago de Compostela (USC). I carried out my doctoral thesis at the Department of Biochemistry and Molecular Biology, University of Santiago under the supervision of Professor Javier Benavente. I obtained a fellowship from the Xunta de Galicia for carrying out doctoral studies. In January 1994 I began a postdoctoral stay at Oxford (UK) in the laboratory of Dr. Polly Roy, working with Bluetongue Virus (BTV). First I was awarded a Marie Curie Fellowship and afterwards I was contracted under a EU project. In September 1996 I was awarded a “Contrato de Reincorporación de Doctores y Tecnólogos del Ministerio de Educación” to return to the University of Santiago. I have directed 11 doctoral thesis and published 60 articles: Cites: 2301 (832 since 2016); H Index: 28 (16 since 2016); i10 index: 49 (35 since 2016). Source: <https://scholar.google.com/citations?user=bZA7sJkAAAAJ&hl=es>.

Research- Our group has been formerly dedicated to study the molecular biology of avian reoviruses, as well as the molecular mechanisms that regulate their interactions with the host cell. Our research focused on different objectives:

1-Structure-function characterization of viral proteins. In our laboratory we have identified and characterized the activity of most proteins of reovirus S1133. We have also obtained the crystal structures of several of them.

2- Virus-cell interactions. Our group has demonstrated that avian reoviruses are resistant to the antiviral effects of interferon. Our results showed that sigmaA plays a fundamental role in the resistance of avian reoviruses to the antiviral effects of interferon. We also showed for the first time the existence of a functional eukaryotic tricistronic gene.

3-Avian reovirus morphogenesis. We have reported that muNS is the viral protein responsible for the formation of the viral factories where viral morphogenesis occurs. We have extended these studies to determine the precise mechanisms controlling the selective recruitment of viral proteins to the factories, for the formation of progeny virus.

4- Virus-based biotechnological applications. Based on the morphogenesis studies (3), we have developed and patented the so-called "IC-tagging" technology platform that allows by the directed relocation of the tagged proteins into protein spheres of diameters in the micrometer (MS) or nanometer (NS) range. They can be formed inside eukaryotic cells (either in the nucleus, the cytoplasm or the ER) or bacteria. The methodology can be used for validation of protein-protein interactions in living cells or for the in vivo production of micro/nanoparticles containing desired proteins. Such particles work as polyantigenic vaccines in the absence of added adjuvants. They can also be used to immobilize enzymes, for industrial or therapeutical use, that get stabilized inside the spheres. The system has produced several patents (see part c.4) that were extended to Europe and USA, and licensed to several national and international companies external to the USC.

5- We also keep close collaboration with several groups based in the CIQUS (Mascareñas, Granja-Montenegro, Megía, Eugenio Vázquez/Miguel Vázquez), on the development of bio-active organic molecules, Juan Lema and Gemma Eibes from the Biogroup (USC) for the characterization of industrial enzymes and several international collaborations (Sandra Diebold NIBSC London, Oscar Burrone ICGEB Trieste).

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

C.1. Publications (*last 5 years*)

1- Xiaoyan Xu; Tomás Pose-Boirazian; Gemma Eibes; Laura E McCoubrey; **Jose Martínez-Costas**; Simon Gaisford; Alvaro Goyanes; Abdul W Basit. A customizable 3D printed device for enzymatic removal of drugs in water. *Water Research*. 208, pp. 10.1016/j.watres.2021.117861. 01/01/2022. Impact factor: 11,236 **Q1**.

2- Vegas; Latorre; Marcos; Gomez-Garcia; Castillo; Zamora; Gomez; **Martínez-Costas**; Vazquez-Lopez; Somoza; Amo-Ochoa. Rational Design of Copper(II)–Uracil Nanoprocessed Coordination Polymers to Improve Their Cytotoxic Activity in Biological Media. *ACS Appl Mater Interfaces*. 11 - 13(31), pp. 36948 - 36957. 11/08/2021. Impact factor: 9,229 **Q1**.

3- Gómez-González; Pérez; Sciortino; Roldan-Martín; **Martínez-Costas**; Maréchal; Alfonso; Vázquez López; Vázquez. Dynamic Stereoselection of Peptide Helicates and Their Selective Labeling of DNA Replication Foci in Cells. *Angew Chem Int Ed Engl*.60(16), pp. 8859 - 8866. 12/04/2021. Impact factor: 15.336 **Q1**.

4-Tomás Pose Boirazian; Gemma Eibes; Natalia Barreiro Piñeiro; Cristina Díaz Jullien; Juan Lema Rodicio; **Jose Martínez Costas**. Chemical and thermal stabilization of Bacillus Subtilis CotA Lacasse by its micro encapsulation in muNS-Mi microspheres. *Scientific Reports*. 11 - 1, pp. 2802. doi: 10.1038/s41598-021-82468-x. 02/02/2021. Impact factor: 4.379 **Q1**.

5- Mateo I. Sánchez; Ayumu Sugiura; Yolanda Vida; Ezequiel Perez-Inestrosa; Jose L. Mascareñas; M. Eugenio Vázquez; **Jose Martinez-Costas**. MitoBlue as a tool to analyze the mitochondria-lysosome communication. *Scientific Reports*. 10, pp. 3528 - 10.1038/s41598-020-60573-7. 26/02/2020. Impact factor: 4.379 **Q1**.

6- Alejandro Marín-López; Natalia Barreiro-Piñeiro; Sergio Utila-Trigo; Diego Barriales; Javier Benavente; Aitor Nogales; **José Martínez-Costas**; Javier Ortego; Eva Calvo-Pinilla. Cross-protective immune responses against ASHV after vaccination with avian reovirus muNS

microspheres and modified Vaccinia virus Ankara. *Vaccine*. 38, pp. 882 - 889. Elsevier, 14/01/2020. Impact factor: 3,641.

7- Sandra P. Amaral; Maun H. Tawara; Marcos Fernandez-Villamarín; Erea Borrajo; **Jose Martinez-Costas**; Anxo Vidal; Ricardo Riguera; Eduardo Fernandez-Megia. Tuning the Size of Nanoassemblies: A Hierarchical Transfer of Information from Dendrimers to Polyion Complexes. *Angewandte Chemie International Edition*. 57(19):5273-5277. 01/04/2018. Impact factor: 11,994 **Q1**.

8- Natalia Barreiro-Piñeiro; Irene Lostalé-Seijo; Rubén Varela-Calviño; Javier Benavente; **Jose Martinez-Costas**. Adaptation of the IC-Tagging methodology to express glycoproteins and difficult-to-express membrane proteins: application to the expression of the Type 1 diabetes auto-antigen IGRP. *Scientific Reports* - doi:10.1038/s41598-018-34488-3. 2018. Impact factor: 4,379 **Q1**.

9- Alejandro Marín-López; Eva Calvo-Pinilla; Diego Barriales; Gema Lorenzo; Javier Benavente; Alejandro Brun; **José Martínez-Costas**; Javier Ortego. Microspheres-prime/rMVA-boost vaccination enhances humoral and cellular immune response in IFNAR(-/-) mice conferring protection against serotypes 1 and 4 of bluetongue virus. *Antiviral Research*. 142, pp. 55 - 62. 18/03/2017. Impact factor: 4,909 **Q1**.

10- Irene Lostalé-Seijo; **Jose Martinez-Costas**; Javier Benavente. Response of Three Different Viruses to Interferon Priming and Dithiothreitol Treatment of Avian Cells. *Journal of Virology*. 90 - 18, pp. 8328 - 8340. 2016. Impact factor: 4,606 **Q1**.

C.2. Congress (by invitation last 5 years)

1- Invited talk (Jose Martínez-Costas): The IC-Tagging Platform and its Use for the Expression of Difficult Proteins. In: "PEGS Europe 2019- Protein and Antibody Engineering Summit". 18-22/11/2019. Lisboa (Portugal). Organizers: Cambridge Helthtech Institute.

2- Invited talk (Jose Martinez-Costas): IC-Tagging methodology: cost-effective production of proteins for biomedicine and vaccines. In "Nanomed" 17-19/06/2019. Braga (Portugal). Organizers: European Technology Platform on Nanomedicine AND International Iberian Nanotechnology Laboratory.

3- Keynote (Jose Martinez-Costas): ARV-derived IC-Tagging methodology for production of epitope-loaded protein microspheres for adjuvant-free vaccination. In: "Vaccine Antigen Delivery: new approaches to vaccine development" 25-27/10/2016. Organizers: Euroscicon UK.

C.3. Research projects (as IP the last 5 years)

1- Nuevos enfoques de la encapsulación de proteínas en micro/nanoesferas basadas en viroplasma para aplicaciones industriales, terapéuticas e inmunoterapia (VIROSPHERE) Ministerio de Ciencia e Innovación. 01/01/2020 - 31/12/2022.

2- Novel vaccine approach for cancer immunotherapy based on protein microspheres. Fundación AECC (Asociación Española contra el cáncer). 01/12/2020 - 30/11/2022.

3- Development of a vaccine candidate against SARS-COV-2 via the muNS-Mi platform by production of microspheres (MS) containing three different viral antigens. TRANSVAC2 Infrastructure Access Call. Code: MUCOVAC. 12/05/2020 - 12/05/2021

4- Desarrollo de una vacuna contra SARS-COV-2 mediante micro/nanoesferas de muNS-Mi. Crue Universidades Españolas, CSIC y Banco Santander FONDO SUPERA COVID-19. Code: DEVASARMIC. 04/06/2020 - 31/12/2022.

5- Reovirus aviar: factores de virulencia y nuevas dianas terapéuticas. Ministerio de Economía y Competitividad 2014 – 2018.

C.4. Contracts, technological or transfer merits

1 Patent: Método de producción de la proteína glucosa-6-fosfatasa **2. Inventors:** Natalia Barreiro-Piñeiro; Rubén Varela Calviño; Javier Benavente; Jose M. Martinez-Costas.

Nº: P201830351. Spain. 09/04/2018.

2 Patent: Protein muNS that can form inclusions in the endoplasmic reticulum, methods for use thereof and uses of same. **Inventors:** Natalia Barreiro-Piñero; Javier Benavente Martínez; José M. Martínez-Costas. **Nº:** EP158443689.9. European Union. **Date:** 21/04/2017.

3 Patent: Protein muNS that can form inclusions in the endoplasmic reticulum, methods for use thereof and uses of same. **Inventors:** Natalia Barreiro-Piñero; Javier Benavente Martínez; José M. Martínez-Costas. **Nº:** US15/513,148. United States of America. **Date:** 21/03/2017.

4 Patent: Proteína muNS capaz de formar inclusiones en el retículo endoplasmático, métodos de uso y usos de la misma. **Inventors:** Natalia Barreiro Piñero; F. Javier Benavente Martínez; José M. Martínez Costas. **Nº:** P201431378. **Conferral date:** 14/11/2016.

5 Patent: Proteins muNS that can form inclusions in the endoplasmic reticulum, methods for the use thereof and uses of same. **Inventors:** Natalia Barreiro-Piñero; Javier Benavente Martínez; José M. Martínez-Costas. **Nº of application:** WO2016/046431A1. **Date:** 01/09/2015.

6 Patent: Applications of the protein muNS and the derivatives thereof. **Inventors:** Alberto Brandariz-Núñez; Rebeca Menaya-Vargas; Javier Benavente; José M. Martínez-Costas. **Nº:** EP2535348. European Union. **Conferral date:** 12/2021.

7 Patent: Applications of the protein muNS and the derivatives thereof. **Inventors:** Alberto Brandariz-Núñez; Rebeca Menaya-Vargas; Javier Benavente; Jose M. Martinez-Costas. **Nº-** US 10,059,745 B2. United States of America. **Conferral date:** 28/08/2018.

8 Patent: Aplicaciones de la proteína muNS y sus derivados. **Inventors:** Brandariz Núñez, Alberto; Menaya Vargas, Rebeca; Benavente, F. Javier; Martínez Costas, Jose M. **Nº:** P201030204. Spain.. **Conferral date:** 08/11/2011.

9 Licensed Patent: Compuestos fluorescentes. PCT/ES2014/070503ES2527255 B2- Licensed to Millipore Corporation 23-04-2021.

10 Contract: Feasibility studies (confidential). Virbac (Carros, France) 117.000 Euro. Jan. 2018- Dec. 2019.