

**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	MARÍA CONCEPCIÓN		
Family name	SERRANO LÓPEZ-TERRADAS		
Gender (*)	FEMALE	Birth date (dd/mm/yyyy)	13/03/1979
Social Security, Passport, ID number	50114964B		
e-mail	<a href="mailto:mc.terradas@csic.es">mc.terradas@csic.es</a>	URL Web:	<a href="https://wp.icmm.csic.es/csc/">https://wp.icmm.csic.es/csc/</a>
Open Researcher and Contributor ID (ORCID) (*)	<a href="https://orcid.org/0000-0002-5010-644X">0000-0002-5010-644X</a>		

(\*) Mandatory

**A.1. Current position**

Position	TENURED TRACK SCIENTIST (CIENTÍFICO TITULAR)		
Initial date	17/03/2017		
Institution	INSTITUTO DE CIENCIA DE MATERIALES DE MADRID, CSIC		
Department/Center	NANOMEDICINE AND NANOTECHNOLOGY		
Country	SPAIN	Teleph. number	+34 913348984
Key words (in alphabetic order)	3D scaffolds, animal studies, biocompatibility, biomaterial, cell culture, endothelial progenitor cells, graphene, iron oxide nanoparticles, materials for health, neural repair, polymers, regenerative medicine, tissue engineering, spinal cord injury		

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

Period	Position/Institution/Country
2014 - 2017	Miguel Servet Postdoctoral Fellow/Hospital Nacional de Paraplégicos/Spain
2010 - 2013	Juan de la Cierva Postdoctoral Fellow/ICMM-CSIC/Spain
2008 - 2010	Postdoctoral Fellow/Northwestern University/USA
2007 - 2008	Postdoctoral Fellow/Universidad Complutense de Madrid/Spain
2005 (3 m)	Predocctoral Visiting Fellow/Northwestern University/USA
2003 - 2006	Predocctoral Fellow/Universidad Complutense de Madrid/Spain

**A.3. Education**

PhD, Licensed, Graduate	University/Country	Year
Licensed in Biology	Universidad Complutense de Madrid/Spain	2002
PhD in Biology	Universidad Complutense de Madrid/Spain	2006

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

**SCIENTIFIC CONTRIBUTIONS:** Since its early beginning in 2002, my research has been focused in the design and development of biomaterials for applications in Biomedicine in the context of Tissue Engineering, including a wide spectrum of materials and applications. I graduated in Biology from the *Universidad Complutense de Madrid* (UCM) in 2002, with an honor license award from UCM. Then, I was awarded a predoctoral scholarship FPU (MEC, 2003-2006). In 2006, I obtained my PhD Degree in Biology, receiving the maximum grade and an honor PhD award from the Faculty of Biology (UCM). This training period defined the foundation of my research career in biomaterials (materials for health). It included a 3-month stage at the Biomedical Engineering Department of Northwestern University. A first postdoctoral training of 1.5 years at the same research group followed, setting up the use of endothelial progenitor cells.



From 2008 to 2010, I was awarded a postdoctoral fellowship for stays abroad (MICINN) to continue my research as a postdoctoral fellow at **Northwestern University** (USA), with a major training in materials science and biomedical engineering. Afterwards, I returned to Spain granted a **postdoctoral fellowship Juan de la Cierva** (MINECO, 2010-2013) at the *Instituto de Ciencia de Materiales de Madrid* (ICMM-CSIC). In 2014, I started my last postdoctoral stage with a **postdoctoral fellowship Miguel Servet I** (ISCIII, 2014-2017) at the **Hospital Nacional de Paraplégicos** (HNP-SESCAM). This stage allowed me starting my independent research in biomaterials for neural tissue engineering. Since 17/03/2017, I am a tenure track scientist at ICMM-CSIC, in the Materials for Medicine and Biotechnology Group (MaMBIO).

I have been (I am) **principal investigator (PI) of 6 research projects** to date (**total funding 1,14 M€**): 3 AEI projects PID2020-113480RB-I00 (218 k€, MICINN, Plan Nacional, 2021-2024), MAT2016-78857-R (121 k€, MINECO, Plan Nacional, 2017-2020) and CP13/0060 (323 k€, ISCIII, Miguel Servet I, 2014-2017); the European project H2020-FET-OPEN-RIA ByAxon (GA. 737116; 3,7 M€ total, 430 k€, 2017-2020) and 2 internal CSIC projects PIE202160E060 (35 k€, CSIC, 2021-2023) and PIE201760I091 (5 k€, CSIC, 2017-2018). At presents, I am the **coordinator of the European project Piezo4Spine** (Horizon Europe Pathfinder; 2023-2026; **3.5 M€ total, 1.1 M€ for CSIC**).

I have **co-authored 65 publications** in the areas of “Materials Science, Biomaterials” and “Chemistry, Multidisciplinary”, with **significant contributions in the field of Materials for Biomedicine**. Importantly, I have been **first author in 29 % (19/65)** and **corresponding author in 38 % (25/95)**. I have also contributed to 6 book chapters and **co-edited the book**: “Engineering Biomaterials for Neural Applications: Targeting Traumatic Brain and Spinal Cord Injuries”. Springer-Nature, 2022. ISBN 978-3-030-81399-4.

**SOCIETY CONTRIBUTIONS**: I am completely devoted to Open Science principles and actively participate in activities envisioned to disseminate and communicate my work to the scientific community, relevant stakeholders and society as a whole. Particularly, I have co-authored **102 communications in national and international conferences**, including IBRO 2023, North America TERMIS 2023, ESB 2021/2015/2013, World ESB 2020, North America SFB 2019/2010, SENC 2019/2017, EMRS 2019/2016/2015/2013, European TERMIS 2019/2017, ESAO 2018, Graphene Week 2018, FENS 2018, and ISCOS 2023/2016, among others. I have **24 invited talks** at national and international conferences/workshops.

I have participated in **over 30 scientific outreach** activities including 11F Women and Girls in Science 2023-2018, Pint of Science 2019, European Researchers’ Night 2023-2018, Brain Awareness Week 2014-2016, several summer schools, multiple press releases/radio interviews (e.g., El País, RNE), among others.

**CONTRIBUTIONS FOR TRAINING OF YOUNG RESEARCHERS**: I have already supervised **3 PhD thesis** (Ana Domínguez-Bajo, 2020, UCM; André Girão, 2023, Univ. Aveiro; Ana Arché, 2023, UCM), **6 Master Thesis** and **4 Degree Final Thesis**. At presents, I am supervising/co-supervising **6 more PhD students** (E. Benayas, J. Martínez, R. Madroñero, L. Ugalde, M. Molina, L. Carvalho) and **1 Master student**. Moreover, I have been **PI of 2 competitive personnel contracts**: JAE-Intro ICU (CSIC, 2022, 3 months, Natalia Villar) and *Programa Investigato* (CAM, 2022-2023, 1 year, Marta Toldos).

**OTHER MERITS**: I have been responsible for the **creation of 3 cell culture laboratories** (one being the first in ICMM-CSIC, 2011, and other the first with accredited biosafety level 2). I am responsible for the creation of an **Associated Research Unit** between CSIC and the HNP-SESCAM (25/07/2017), with two positive 3-year renewals to date (2020, 2023). Since March 2019, I am an **Associate Editor of the journal “Bioactive Materials”**, current leading journal in the field of Materials Science, Biomaterials. I have recognition for **3 sexenios** (2004-2021) and **4 quinquenios** (2003-2022).

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

### C.1. Publications

1. E. Benayas, A. Espinosa, M.T. Portolés, V. Vila-del Sol, M.P. Morales, **M.C. Serrano\***. **2023**. Cellular and molecular processes are differently influenced in primary neural cells by slight changes in the physicochemical properties of multicore magnetic nanoparticles. *ACS Applied Materials and Interfaces* 15, 17726-17741. Author position: **6/6 (CA). Q1**.
2. A. Girão\*, **M.C. Serrano\***, A. Completo, P. Marques\*. **2022**. Is graphene shortening the path toward spinal cord regeneration? *ACS Nano* 16, 13430–13467. Author position: **2/4 (CA). D1**. Selected as “Featured Content: Recent highlights from the journal” for weeks.
3. A. Domínguez-Bajo *et al.* **2021**. Nanostructured gold electrodes promote neural maturation and network connectivity. *Biomaterials* 279, 121186. Author position: **14/14 (CA). D1**.
4. A. Domínguez-Bajo; A. González-Mayorga; C.R. Guerrero; **M.C. Serrano\*** *et al.* **2019**. Myelinated axons and functional blood vessels populate mechanically compliant rGO foams in chronic cervical hemisectioned rats. *Biomaterials* 192, 461 - 474. Author position: **7/7 (CA). D1**. First journal in the topic (Materials Science, Biomaterials).
5. E. López-Dolado; A. González-Mayorga; M.C. Gutiérrez, **M.C. Serrano\***. **2016**, Immunomodulatory and angiogenic responses induced by graphene oxide scaffolds in chronic spinal hemisectioned rats. *Biomaterials* 99, 72 - 81. Author position: **4/4 (CA). D1**. First journal in the topic (Materials Science, Biomaterials).
6. **M.C. Serrano\***; S. Nardecchia; C. García-Rama; M.C. Gutiérrez\* *et al.* **2014**. Chondroitin sulphate-based 3D scaffolds containing MWCNTs for nervous tissue repair. *Biomaterials* 35, 1543 - 1551. Author position: **1/7 (CA). D1**. First journal in the topic (Materials Science, Biomaterials).
7. **M.C. Serrano\***; M.C. Gutierrez, F. del Monte. **2014**. Role of polymers in the design of 3D carbon nanotube-based scaffolds for biomedical applications. *Progress in Polymer Science* 39, 1448 - 1471. Author position: **1/3 (CA). D1**.
8. S. Nardecchia *et al.* **2012**. Osteoconductive performance of carbon nanotube scaffolds homogeneously mineralized by flow-through electrodeposition. *Advanced Functional Materials* 22, 4411. Author position: **2/6 (CA). D1**.
9. **M.C. Serrano**; L. Carbajal, G.A. Ameer\*. **2011**. Novel biodegradable shape-memory elastomers with enhanced drug release capabilities. *Advanced Materials* 23, 2211 - 2215. Author position: **1/3. D1**.
10. **M.C. Serrano**; E. Chung, G.A. Ameer\*. **2010**. Advances and applications of biodegradable elastomers in regenerative medicine. *Advanced Functional Materials* 20, 1 – 17. Author position: **1/3. D1**.

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

1. 62<sup>nd</sup> ISCOS Annual Scientific Meeting. Edinburgh, Scotland. 8-11/10/**2023**. Poster: “Synergistic effect of graphene implants and motor training in a rat cervical hemisection model: Analysis of the right brachial triceps”. Madroñero-Mariscal R, Benayas E, Hernández Y, Serrano MC, López-Dolado E. Award to the best presentation.
2. 11<sup>th</sup> IBRO World Congress of Neuroscience. Oral communication: “Designing magnetically responsive natural hydrogels for neural repair”. Martínez-Ramírez J, Toldos M, Benayas E, Serrano MC, Morales MP, Veintemillas S. Granada, Spain. 9-13/09/**2023**.
3. TERMIS AMERICA Annual Meeting. Boston, USA. 11-14/04/**2023**. Poster: “Designing magnetic iron oxide nanoparticles to drive neural regeneration at the damaged central nervous system”. Martínez J, Toldos M, Benayas E, Morales MP, Serrano MC\*.
4. INVITED SPEAKER at the Symposium “Cell and Soft Matter Nanomechanics” at 9<sup>th</sup> Multifrequency AFM Conference. 14-16/06/**2023**. Oral communication: “Building mechanically compliant responsive scaffolds for spinal cord injury”. Serrano MC\*.



5. KEYNOTE SPEAKER and CHAIRPERSON: 2<sup>nd</sup> Global Nanomaterials Series 2023. Comunicación oral: "Nanomaterials for the design of novel therapeutics in neural repair". Serrano MC\*. Madrid, Spain. 19-21/06/2023.
6. PLENARY SPEAKER at the symposium "LA QUÍMICA DE LA NANOMEDICINA": XXXIX Reunión Bienal de Química de la RSEQ. "The impact of the physicochemical properties of nanomaterials on the design of therapeutic biomaterials". Serrano MC\*. Zaragoza, Spain, 26-28/06/2023.
7. INVITED SPEAKER: International Conference on Nanomaterials Applied to Life Sciences (NALS). Santander, Spain. 27-29/04/2022. "Approaching neural repair at the injured spinal cord by the use of nanomaterials". Serrano MC\*.
8. SPEAKER, CHAIRPERSON and POSTER EVALUATOR: 31<sup>st</sup> Conference of the European Society for Biomaterials. VIRTUAL. 5-9/09/2021. Oral communication: "Can 3D graphene oxide scaffolds prompt neural regeneration? Lessons learned in vivo at the rat injured spinal cord". Serrano MC\*.

**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. "Piezo-driven theramesh: A revolutionary multifaceted actuator to repair the injured spinal cord (Piezo4Spine, GA N° 101098597)". HORIZON-EIC-2022-PATHFINDEROPEN-01. **Coordinadora: M. Concepción Serrano**. Funding: 3.5 M€ total; 1.1 M€ for ICMM-CSIC. Duration: 01/01/2023 – 31/12/2026. Consortium: ICMM-CSIC (Spain), HNP-SESCAM (Spain), Instituto Italiano de Tecnología (Italy), Université Catholique de Louvain (Belgium), Universidad de Coimbra (Portugal), Black-Drop (Germany) y ACIB (Austria). <https://www.piezo4spine.eu/>.
2. "Smart magnetic bio-implants for neural regeneration: Application to spinal cord injury (PID2020-113480RB-I00)", MICINN-AEI. **PIs:** Sabino Veintemillas and **M. Concepción Serrano**. Duration: 01/09/2021 - 31/08/2024. Funding: 218 k€.
3. Towards an active bypass for neural reconnection. **European Commision H2020-FET-OPEN-RIA**. Instituto de Ciencia de Materiales de Madrid. **PI: M. Concepción Serrano (WP3 Leader)**; Rodolfo Miranda (Coordinador). Duration: **01/01/2017 - 31/12/2020**. Consortium: Centre National De La Recherche Scientifique CNRS, Fundación IMDEA Nanociencia, Mfd-diagnostics GmbH; Scuola Internazionale Superiore Di Studi Avanzati Di Trieste; Servicio de Salud de Castilla-La Mancha HNP-SESCAM. Funding: **3.7 M€ total; 210 k€ for ICMM-CSIC**.
4. Diseño y desarrollo de un biomaterial 3D bioactivo de óxido de grafeno funcionalizado para el tratamiento de la lesión medular (MAT2016-78857-R). MINECO. **PI: M. Concepción Serrano**. Duration: **30/12/2016 - 29/12/2019**. Funding: **121 k€**.
5. Desarrollo de estructuras 3D basadas en grafeno y biofuncionalizadas para la reparación de sistema nervioso central; **ISCI - Miguel Servet I**. Hospital Nacional de Parapléjicos. **PI: M. Concepción Serrano**. Duration: **01/01/2014 - 6/03/2017**. Funding: **120 k€**.

**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 PATENT:** Title registered industrial property: Bidirectional Medical Devices for Monitoring and Stimulating Neurons. Entities holding rights: IMDEA NANOCIENCIA (40%), SISSA (20%), CNRS (20%), CSIC (10%), SESCAM (10%). Number of application: **EP20382637.5**. Country of inscription: Spain; Date of registration: 16/07/2020.

**1 Material Transfer Agreement** with Northwestern University (Agreement between Prof. G. A. Ameer and Dr. M. C. Serrano); N° of researchers: 2; Start date: 10/07/2019.