CV Date	12/05/2025

Part A. PERSONAL INFORMATION

First Name	Fernando		
Family Name	Herranz Rabanal		
Sex	Not Specified	Date of Birth	20/02/1976
ID number Social Security, Passport			
URL Web	https://nanomedmol.com/		
Email Address			
Open Researcher and Contributor ID (ORCID)	0000-0002-3743-0050		

A.1. Current position

Job Title	Tenured researcher		
Starting date	2021		
Institution	Consejo Superior de Investigaciones Científicas		
Department / Centre			
Country	Spain	Phone Number	(34) 912587635
Keywords	Radiochemical techniques; Organic chemistry; Nanomaterials; physical instrumentation in biomedicine; Biomedicine		

A.2. Previous positions (Research Career breaks included)

Period	Job Title / Name of Employer / Country
2018 - 2021	distinguished researcher / Consejo Superior de Investigaciones Científicas
2012 - 2018	Senior postdoctoral researcher / Fundación CNIC Carlos III
2013 - 2018	Assitant lecturer / Universidad Carlos III de Madrid
2009 - 2012	Postdoctoral researcher / Universidad Complutense de Madrid
2007 - 2009	Research Associate / Imperial College London
2007 - 2007	Postdoctoral researcher / Universidad Complutense de Madrid
2006 - 2006	Investigador Postdoctoral / Centro de Biología Molecular Severo Ochoa
2001 - 2006	Predoctoral / Universidad Nacional de Educación a Distancia

A.3. Education

Degree/Master/PhD	University / Country	Year
Bioorganic chemistry PhD	Universidad Nacional de Educación a Distancia	2006
Chemistry BSc	Universidad Complutense de Madrid	2000

Part B. CV SUMMARY

In 2006, I completed my doctorate in bio-organic chemistry, specialising in supramolecular chemistry and molecular recognition, and then spent two years working at Imperial College London in supramolecular chemistry and molecular imaging. My research focuses on the combination of chemistry and nanotechnology for imaging applications. We pioneered the synthesis of 68Ga core-doped nanomaterials as multimodal probes for simultaneous positive contrast MRI and PET, which we have applied for the early diagnosis of numerous diseases in recent years. This nano tracer opened two lines in the group, one focused on nuclear imaging, by demonstrating the incorporation of different radiometals in their core and the second centred on improving the positive contrast generated in MRI. In this sense, we recently published an article in Chemical Science where we synthesised 30 different nanomaterials, changed the core composition, and studied the effect of their properties as tracers for positive-

contrast MRI. Finally, we demonstrated their use for the in vivo diagnosis of glioblastoma. This Chem. Sci. paper is a good example of my recent research, where a development in chemistry translates into a novel imaging application. Related to imaging I was, for six years, the head of the Nanomedicine and Radiochemistry Lab in the Advanced Imaging Unit at the Spanish Cardiovascular Research Centre (CNIC), setting up the first radiochemistry lab in the institution and leading a group of seven people performing research on the areas of imaging and radiochemistry for cardiovascular diseases. For three years, I have served on the Advanced Imaging Unit committee to evaluate the proposed imaging experiments. During that time, we were also at the forefront in Spain in utilising isotopes such as 89Zr and 68Ga for cardiovascular imaging, particularly in atherosclerosis imaging. In 2018, I secured a tenured position at the Instituto de Quimica Medica of the Spanish Research Council (IQM-CSIC). In the last five years, I have been the coordinator of two imaging networks, one focusing on nanomedicine and imaging (NanomedCSIC Hub) and the other on imaging techniques and tracers (DIAMOND). In 2019, I became the deputy director of IQM-CSIC in charge of the services of the centre and assisting the director in the administration of the institute.

Part C. RELEVANT ACCOMPLISHMENTS

C.1. Most important publications in national or international peer-reviewed journals, books and conferences

AC: corresponding author. (nº x / nº y): position / total authors. If applicable, indicate the number of citations

1 **Scientific paper**. J. Jonathan Nue-Martinez; Marta Leo-Barriga; Fernando Herranz; Zisis Koutsogiannis; Paul W. Denny; Godwin U. Ebiloma; Christophe Dardonville; Ana Gonzalez-Paredes. 2025. Nanostructured Lipid Carrier for Intracellular Delivery of a Bis(pyridine-2-carboxamidine) DNA Minor Groove Binder Active against Leishmania. ACS Omega. 10, pp.7795.

2 **Scientific paper**. Katarzyna Malarz; Julia Korzuch; Anna Mrozek-Wilczkiewicz; et al; Maciej Serda. 2025. Aminofullerenes as targeted inhibitors of EGFR: from pancreatic cancer inhibitors to Drosophila m. Toxicology. Nanomedicine. 20-6, pp.585.

3 **Scientific paper**. Daniel Fernandez-Villa; Aitor Herraiz; Kyra de Wit; Fernando Herranz; Maria Rosa Aguilar; Luis Rojo. 2025. Design of tunable hyaluronic acid and O′-carboxymethyl chitosan formulations for the minimally invasive delivery of multifunctional therapies targeting rheumatoid arthritis. Carbohydrate Polymers. Elsevier. 349, pp.123018.

4 **Scientific paper**. Aitor Herraiz; M. Puerto Morales; Lydia Martínez-Parra; et al; (10/10) Fernando Herranz (AC). 2024. Periodic table screening for enhanced positive contrast in MRI and in vivo uptake in glioblastoma. Chemical Science. 15, pp.8578.

5 **Scientific paper**. Muñoz-Hernando, María; Nogales, Paula; Fernández-Barahona, Irene; Ruiz-Cabello, Jesús; Bentzon, Jacob F.; (6/6) Herranz, Fernando (AC). 2024. Sphingomyelinase-responsive nanomicelles for targeting atherosclerosis. Nanoscale. pp.10.1039.D3NR06507C-10.1039.D3NR06507C.

6 **Scientific paper**. Lydia Martinez-Parra; Marina Piñol-Cancer; Carlos Sanchez-Cano; et al; Susana Carregal-Romero. 2023. A Comparative Study of Ultrasmall Calcium Carbonate Nanoparticles for Targeting and Imaging Atherosclerotic Plaque. ACS Nano. 17-14, pp.13811.

7 **Scientific paper**. Eva María Arroyo-Urea; María Muñoz-Hernando; Marta Leo-Barriga; Fernando Herranz; Ana González-Paredes. 2023. A quality by design approach for the synthesis of palmitoyl-L-carnitine-loaded nanoemulsions as drug delivery systems. Drug Delivery. 30-1, pp.2179128.

8 **Scientific paper**. Belen Martinez-Gualda; Irene Fernandez-Barahona; Alberto Mills; et al; Ana San-Felix. 2022. Organotropic dendrons with high potency as HIV-1, HIV-2 and EV-A71 cell entry inhibitors. European Journal of Medicinal Chemistry. 237, pp.114414.

9 **Scientific paper**. Jaume Gazquez; Alba Grayston; Mariana Teles; Fernando Herranz; Nerea Roher; Anna Roig; Marti Gich. 2022. Magnetic Mesoporous Silica Nanorods Loaded with Ceria and Functionalized with Fluorophores for Multimodal Imaging. ACS Applied Nano Materials. 5-2, pp.2113-2125.

10 **Scientific paper**. Susana Carregal-Romero; Hugo Groult; Olga Cañadas; et al; Jesus Ruiz-Cabello. 2022. Delayed alveolar clearance of nanoparticles through control of coating composition and interaction with lung surfactant protein A. Biomaterials advances. in press.

11 **Scientific paper**. Juan Pellico; Irene Fernández-Barahona; Jesús Ruiz-Cabello; et al; (11/11) Fernando Herranz (AC). 2021. HAP-Multitag, a PET and Positive MRI Contrast Nanotracer for the Longitudinal Characterization of Vascular Calcifications in Atherosclerosis. ACS Applied Materials & Interfaces. 13, pp.45279-45290.

12 **Scientific paper**. Sara Díez-Villares; Juan Pellico; Noemi Gómez-Lado; et al; Maria De la Fuente. 2021. Biodistribution of 68/67Ga-Radiolabeled Sphingolipid Nanoemulsions by PET and SPECT Imaging. International Journal of Nanomedicine. 16, pp.5923-5935.

13 **Scientific paper**. Eva Mazarío; Magdalena Cañete; Fernando Herranz; Jorge Sánchez-Marcos; Jesús M. de la Fuente; Pilar Herrasti; Nieves Menendez. 2021. Highly Efficient T2 Cobalt Ferrite Nanoparticles Vectorized for Internalization in Cancer Cells. Pharmaceuticlas. 14, pp.124.

14 **Scientific paper**. Sara Cogliati; Fernando Herranz; Jesús Ruiz-Cabello; Jose A Enríquez. 2021. Digitonin concentration is determinant for mitochondrial supercomplexes analysis by BlueNative page. BBA - Bioenergetics. 1862, pp.148332.

15 **Scientific paper**. Fernando Herranz; David García-Soriano; Rebeca Amaro; et al; Gorka Salas. 2020. The influence of cation incorporation and leaching in the properties of Mn-doped nanoparticles for biomedical applications. Journal of Colloid and Interface Science. 578, pp.510-521.

16 **Scientific paper**. Yilian Fernández-Alfonso; Gorka Salas; Irene Fernández-Barahona; Fernando Herranz; Cordula Grüttner; Jesús Martínez De la Fuente; María del Puerto Morales; Lucía Gutiérrez. 2020. Smartphone-Based Colorimetric Method to Quantify Iron Concentration and to Determine the Nanoparticle Size from Suspensions of Magnetic Nanoparticles. Particle & Particle Systems Characterization. pp.10.1002/ppsc.202000032.

17 **Scientific paper**. Jose M. Adrover; Juan Pellico; Irene Fernández-Barahona; Sandra Martín-Salamanca; Jesús Ruiz-Cabello; Andrés Hidalgo; (7/7) Fernando Herranz (AC). 2020. Thrombo-tag, an in vivo formed nanotracer for the detection of thrombi in mice by fast pre-targeted molecular imaging. Nanoscale. 12, pp.22978-22987.

18 **Review**. Maria Lazaro-Diez; Eva Maria Arroyo-Urea; Junkal Garmendia; Fernando Herranz; Ana Gonzalez-Paredes. 2024. Lipid-based nanomedicines for the treatment of bacterial respiratory infections: current state and new perspectives. Nanomedicine (London). pp.nnm-2023-0243.

19 **Review**. Juan Pellico; Jesús Ruiz-Cabello; (3/3) Fernando Herranz (AC). 2023. Radiolabeled Iron Oxide Nanomaterials for Multimodal Nuclear Imaging and Positive Contrast Magnetic Resonance Imaging (MRI): A Review. ACS Applied Nano Materials. 6-22, pp.20523.

C.3. Research projects and contracts

1 **Project**. Immunomodulatory strategies in vascular remodelling: novel diagnosis and therapeutic approaches. Fernando Herranz. (Medicinal Chemistry Institute). 01/01/2023-31/12/2025. 850.000 €. Principal investigator.

2 **Project**. Molecular imaging diagnostics: basic research and translation. Fernandi Herranz. (Consejo Superior de Investigaciones Científicas). 01/01/2023-31/07/2025. 19.100 €.

3 **Project**. Nanotracers for the non-invasive diagnosis of neurovascular and neurodegenerative diseases. Proof of concept. Fernnfo Herranz. (Medicinal Chemistry Institute). 01/12/2022-30/11/2024. 160.000 €. Principal investigator.

4 **Project**. Nanomedicine CSIC Hub. (Consejo Superior de Investigaciones Científicas). 01/07/2021-30/06/2024. 350.000 €. Co-ordinator.

5 **Project**. PID2019-104059RB-I00, Nanoparticles for in vivo positive contrast in MRI: application to the diagnosis and characterization of atherosclerosis. Ministerio de Economia y Competitividad. Fernando Herranz. (Medicinal Chemistry Institute). 01/06/2020-31/05/2024. 145.000 €. Principal investigator.

C.4. Activities of technology / knowledge transfer and results exploitation

1 Aitor Herraiz; Fernando Herranz. EP23382465.5. Iron oxide nanoparticles doped with Ga and Zn Spain. 18/05/2023. Consejo Superior de Investigaciones Científicas.

2 Eva M. Arroyo-Urea; María Lázaro; Junkal Garmendia; Fernando Herranz; Ana Gonzalez-Paredes. ES1641.1791. Nanoemulsiones para inhibir la formación de biopelículas bacterianas Spain. 23/03/2023. Consejo Superior de Investigaciones Científicas.