

CV Date	30/06/2024
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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	Científico Titular		
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
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	Predocctoral / 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

PhD in bio-organic chemistry in 2006 with excellence award in 2007. Postdoctoral stays at Universidad Complutense de Madrid (3 years), Imperial College London (2 years) and Spanish Cardiovascular Research Centre (7 years). Tenured researcher at Medicinal Chemistry Institute in the Spanish Research Council (CSIC). Our group is focused on the application of chemistry to nanomedicine and molecular imaging with particular interest in the diagnosis of vascular diseases. I've been working on this area for the last 15 years, as a result I have published 60 articles, ~85 communications in congresses, 10 invited talks, 6 PCT patents and have been PI of 15 competitive projects in Spain and Europe. I've been awarded 3 "sexenios de investigación" and have an h-index of 24. Since 2019 I'm deputy director of the Medicinal Chemistry Institute at CSIC.

Part C. RELEVANT ACCOMPLISHMENTS

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

AC: corresponding author. (n° x / n° y): position / total authors. If applicable, indicate the number of citations

- 1 **Scientific paper.** Aitor Herraiz; M. Puerto Morales; Lydia Martínez-Parra; et al; Fernando Herranz. 2024. Periodic table screening for enhanced positive contrast in MRI and in vivo uptake in glioblastoma. *Chemical Science*. 15, pp.8578.
- 2 **Scientific paper.** Muñoz-Hernando, María; Nogales, Paula; Fernández-Barahona, Irene; Ruiz-Cabello, Jesús; Bentzon, Jacob F.; Herranz, Fernando. 2024. Sphingomyelinase-responsive nanomicelles for targeting atherosclerosis. *Nanoscale*. pp.10.1039.D3NR06507C-10.1039.D3NR06507C.
- 3 **Scientific paper.** Marta Ibañez-Moragues; Irene Fernandez-Barahona; Rocio Santacruz; et al; Miguel Angel Morcillo. 2023. Zinc-Doped Iron Oxide Nanoparticles as a Proton-Activatable Agent for Dose Range Verification in Proton Therapy. *Molecules*. 28-19, pp.6874.
- 4 **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.
- 5 **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.
- 6 **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.
- 7 **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.
- 8 **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.
- 9 **Scientific paper.** Juan Pellico; Irene Fernández-Barahona; Jesús Ruiz-Cabello; et al; Fernando Herranz. 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.
- 10 **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.
- 11 **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. *Pharmaceuticas*. 14, pp.124.
- 12 **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.
- 13 **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.

- 14 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.
- 15 Scientific paper.** Jose M. Adrover; Juan Pellico; Irene Fernández-Barahona; Sandra Martín-Salamanca; Jesús Ruiz-Cabello; Andrés Hidalgo; Fernando Herranz. 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.
- 16 Scientific paper.** Yurena Luengo; Manuel A. Roldan; María Varela; (4/6) Fernando Herranz; M. Puerto Morales; Sabino Veintemillas-Verdaguer. 2019. Doped-Iron Oxide Nanocrystals Synthesized by One-Step Aqueous Route for Multi-Imaging Purposes. --*Journal of Physical Chemistry C*--. 123, pp.7356-7365.
- 17 Scientific paper.** Irene Fernandez-Barahona; Lucia Gutierrez; Sabino Veintemillas-Verdaguer; et al; (9/9) Fernando Herranz (AC). 2019. Cu-Doped Extremely Small Iron Oxide Nanoparticles with Large Longitudinal Relaxivity: One-Pot Synthesis and in Vivo Targeted Molecular Imaging. -- *ACS Omega* --. 4, pp.2719-2727.
- 18 Scientific paper.** Carlos Velasco; Adriana Mota-Cobián; Rubén A. Mota; et al; Samuel España; (5/10) Fernando Herranz. 2019. Quantitative assessment of myocardial blood flow and extracellular volume fraction using 68Ga-DOTA-PET: a feasibility and validation study in large animals. --*Journal of Nuclear Cardiology*--. in press.
- 19 Scientific paper.** Juan Pellico; Irene Fernández-Barahona; Marina Benito; Angel Gaitan-Simon; Lucia Gutierrez; Jesus Ruiz-Cabello; (7/7) Fernando Herranz (AC). 2019. Unambiguous detection of atherosclerosis using bioorthogonal nanomaterials. -- *Nanomedicine: Nanotechnology, Biology and Medicine* --. 17, pp.26-35.
- 20 Scientific paper.** Juan Pellico; Ana V. Lechuga-Vieco; Elena Almarza; et al; (11/11) Fernando Herranz (AC). 2018. Molecular imaging with nanoparticles: specific in vivo detection of neutrophils. --*Archivos de Bronconeumologia*--. 54, pp.1-7.
- 21 Scientific paper.** Hugo Groult; Isabel García-Álvarez; Lorenzo Romero-Ramírez; Manuel Nieto-Sampedro; (5/7) Fernando Herranz; Alfonso Fernández-Mayoralas; Jesús Ruiz-Cabello. 2018. Micellar Iron Oxide Nanoparticles Coated with Anti-Tumor Glycosides. --*Nanomaterials*--. 8, pp.567.
- 22 Scientific paper.** Ana V. Lechuga-Vieco; Hugo Groult; Juan Pellico; Jesus Mateo; Jose A. Enriquez; Jesus Ruiz-Cabello; (7/7) Fernando Herranz (AC). 2018. Protein corona and phospholipase activity drive selective accumulation of nanomicelles in atherosclerotic plaques. --*Nanomedicine: Nanotechnology, Biology and Medicine*--. 14-3, pp.643-650.
- 23 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.
- 24 Review.** Juan Pellico; Jesús Ruiz-Cabello; Fernando Herranz. 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.
- 25 Review.** Juan Pellico; Fernando Herranz; Jesús Ruiz-Cabello; María Muñoz-Hernando; Irene Fernández-Barahona. 2020. Iron Oxide Nanoparticles: An Alternative for Positive Contrast in Magnetic Resonance Imaging. *Inorganics*. 8-28, pp.10.3390/inorganics8040028.
- 26 Bibliographic review.** Irene Fernández-Barahona; María Muñoz-Hernando; (3/3) Fernando Herranz (AC). 2019. Microwave-Driven Synthesis of Iron-Oxide Nanoparticles for Molecular Imaging. --*Molecules*--. 24, pp.1224.
- 27 Bibliographic review.** Irene Fernández-Barahona; María Muñoz-Hernando; Juan Pellico; Jesús Ruiz-Cabello; (5/5) Fernando Herranz (AC). 2018. Molecular Imaging with 68Ga Radio-Nanomaterials: Shedding Light on Nanoparticles. --*Applied Sciences*--. 8, pp.1098.

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.** Diagnóstico por imagen molecular: investigación básica y desarrollo traslacional. Fernandi Herranz. (Consejo Superior de Investigaciones Científicas). 01/01/2023-31/12/2024. 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 Economía y Competitividad. Fernando Herranz. (Medicinal Chemistry Institute). 01/06/2020-31/05/2024. 145.000 €. Principal investigator.
- 6 Project.** RED2018-102469-T, Nanomedicine network for the diagnosis and treatment of diseases with deep social impact: cancer, atherosclerosis and infectious diseases. (Medicinal Chemistry Institute). 02/12/2019-01/12/2021. 15.000 €. Co-ordinator.
- 7 Project.** AC17/00062, Subclinical atherosclerosis characterization: Nanoparticle-based molecular and cellular imaging. ERA-CVD. (Fundación CNIC Carlos III). 22/05/2018-21/05/2021.

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.
- 3 Patent of invention.** Juan Pellico; Riju Bhavesh; Jesús Ruiz-Cabello; Fernando Herranz. EP14382301.1. Single core radionuclide-metal oxide nanoparticles: a new biocompatible nanosystem for dual hot spot imaging Spain. 31/07/2014. Fundación CNIC Carlos III.
- 4** Hugo Groult; Jesús Ruiz-Cabello; Fernando Herranz. EP14382093.4. Nanoparticles with antitumoral activity Spain. 17/03/2014. Fundación CNIC Carlos III.
- 5** Beatriz Salinas; Jesus Ruiz-Cabello; Fernando Herranz. P201231038. Nanopartículas recubiertas de gelatina Spain. 03/07/2012. Fundación CNIC Carlos III.