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**Academic formation:**

2009: PhD in Biochemistry and Molecular Biology, Universidad Complutense de Madrid

2001: Degree in Biology, mention Biochemistry and Molecular Biology, Universidad Autónoma de Madrid.

**Current position:**

2024: Principal investigator in Laboratorio de REuamntología y Metabolismo Óseo. Instituto de Investigación Sanitaria Fundación Jiménez Díaz- Universidad Autónoma de Madrid.

**Previous positions:**

2021 - 2024 Miguel Servet tipo II at FIIS-Fundación Jiménez Díaz.

2016 - 2021 Miguel Servet tipo I at FIIS-Fundación Jiménez Díaz.

2014 - 2016 Research Scientist at NYU School of Medicine.

2010 - 2014 post-doctoral fellow at NYU School of Medicine.

2004 - 2009 Pre-doctoral fellow at Universidad Complutense de Madrid.

2002 - 2004 Fellow at Hospital Clínico San Carlos

2001 - 2002 Trainee at Clínica La Milagrosa, S.A.

**General quality indicators of scientific production**

|                 |      |            |
|-----------------|------|------------|
| Google Scholar: | All  | Since 2021 |
| Citations       | 2980 | 1516       |
| h-index         | 36   | 24         |
| i10-index       | 61   | 50         |

Scopus: citations: 2229  
h-index: 30

Web of Science: h-index: 28

Granted with the R3 Certificate in 2023.

The long-term goals of the PI research are to develop a deeper understanding of the role of adenosine receptors in the control of musculoskeletal homeostasis and to find novel therapeutic agents for the use in several diseases in the musculoskeletal system. Since 2016 the PI works in FIIS-FJD, first as a Miguel Servet researcher (CP15/00053 and CPII20/00017) and then as a stabilized researcher, is leading its own research focus on bone and muscle comorbidities under inflammatory situations (HIV infection, rheumatoid arthritis, frailty...) and how to counteract them targeting purinergic signalling.

Projects as a PI:

- 1.- Modulation of the purinergic system with agents that increase extracellular adenosine levels as a potential therapeutic target for sarcopenia. PI22/00347; 2022-2025 (extended 2026); 147.620 €.
- 2.- Efecto catabólico pleiotrópico del Tenofovir y su control terapéutico. PI19/0744; 2020-2022 (extended 2023); 183.920 €
- 3.- Tenofovir, fármaco antirretroviral para VIH, y sus efectos en hueso y músculo. Relación entre el sistema purinérgico, el hueso, el cartílago y el músculo. PI16/00991, 2017-2019 (extended to 2020). 134.915,00 €
- 4.- Confirmación del papel de Draxina y evaluación del papel de los péptidos miméticos de Draxina en la diferenciación de osteoclastos. Draxin and mimetic compounds. Lead Discovery Center GmbH (Germany); 2016-2023; 70.000 €
- 5.- Evaluación de la formación de células gigantes sobre distintas aleaciones metálicas de uso clínico en presencia y ausencia de infección por *Staphylococcus aureus*. FEIOMM-SEIOMM; 2022-2023; 7.000 €.
- 6.- Papel de los iones metálicos esenciales ( $Mg^{2+}$ ,  $Zn^{2+}$ ,  $Fe^{2+/3+}$ ) en el metabolismo óseo: implicaciones en la fisiopatología de la osteoporosis. FEIOMM-SEIOMM; 2026-2028; 8.000 €.

Projects as a collaborator:

- 1.- Fabricación aditiva de CoCrMo y de estructuras biomiméticas porosas de Ti6Al4V y su funcionalización antibacteriana mediante anodizado e impregnación con péptidos. Ministerio de Economía, Industria y Competitividad; MAT2017-86163-C2-1-R; 2018-2021; 114.950 €. PI: Maria de los Ángeles Arenas Vara.

2.- Diseño y fabricación de nuevas estructuras híbridas metal-polímero reabsorbibles y biomiméticas para regeneración de tejido óseo. Universidad Rey Juan Carlos. 01/01/2025-31/12/2025; 3.644,80 €. PI: Sandra Cifuentes Cuellar.

3.- Inflammatory Diseases Network (REI) (RD21/002/0025, actually RD24/0007/0031).

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Since I started my scientific career I have generated over 80 scientific publications.

Publications sin the last 5 years:

1.- Response of ultrasound-assessed synovitis to baricitinib, in monotherapy and combined with methotrexate, compared with etanercept in rheumatoid arthritis: a randomised, international, multicentre trial. Naredo E, Olivas-Vergara O, Borges PE, Recuero-Díaz S, Saraiva F, Martins-Martinho J, Costa F, Tenazinha C, Duarte-Monteiro AM, Melo AT, Guillén-Astete CA, Rodríguez-García A, Blanco-Cáceres B, Boteanu AL, Mera-Varela A, Pérez-Pampín E, Golán YL, Campos Fernández C, Fragío Gil JJ, González Mazario R, Steiner M, Vergara-Dangond C, Paredes-Romero MB, Muñoz-Fernández S, Stoenoiu MS, Toukap AN, Durnez A, de Agustín de Oro JJ, Añez GA, Coronel L, Vicente-Rabaneda EF, Castañeda S, Llorente I, Padovano I, Gouze H, Leboime A, Breban M, Uson J, Villaverde-García V, Miguélez-Sánchez JR, Pérez García C, Meraz-Ostiz JA, Polino L, Finzel S, Kanne AM, Jandova I, **Mediero A**, Herencia C, Herrero-Beaumont G, Largo R. *Ann Rheum Dis*. 2026 Jul;85(7):1255-1267. doi: 10.1016/j.ard.2026.03.025. Epub 2026 Apr 23. PMID: 42025496 *Clinical Trial*.

2.- Reply. Marco-Bonilla M, **Mediero A**, Fresnadillo M. *Arthritis Rheumatol*. 2026 Aug;78(8):1807-1808. doi: 10.1002/art.70171. Epub 2026 Apr 20. PMID: 41958157.

3.- Integration of gold standard arthroscopy, MRI and synovial histopathology outcomes for enhancing early knee osteoarthritis diagnosis. Herrero-Beaumont G, Fernández-Jara J, Llorca J, Sanchez-Platero I, Garmendia M, Masa JJ, Auñón Á, Rodríguez-Zamorano P, **Mediero A**, López-Oliva F, Al-Daghri N, Veronese N, Reginster JY, Largo R. *Aging Clin Exp Res*. 2026 Feb 20;38(1):96. doi: 10.1007/s40520-026-03350-2. PMID: 41721141.

4.- Evaluation of bacterial adherence and biofilm development on an anodized stainless-steel surface for the prevention of osteosynthesis-associated infections. Medel-Plaza M, Arenas MA, Aguilera-Correa JJ, De Bleeckere A, **Mediero A**, García I, De Damborenea JJ, Esteban J, Coenye T, Conde A. *J Bone Jt Infect*. 2025 Dec 9;10(6):581-595. doi: 10.5194/jbji-10-581-2025. eCollection 2025. PMID: 41477192.

5.- Dual Action of Dipyridamole in Experimental Rheumatoid Arthritis: Suppression of Joint Inflammation and Upregulation of Muscle Anabolism via Adenosine and AMPK Pathways. Marco-Bonilla M, Fresnadillo M, Sanchez-Platero I, de la Riva-Bueno M, Huete-Toral F, Carracedo G, Conde C, Benitez Y, Minguez P, Cifuentes SC, Rams J, Herrero-Beaumont G, Largo R, **Mediero A**. *Arthritis Rheumatol*. 2026 Jul;78(7):1535-1553. doi: 10.1002/art.70047. Epub 2026 Apr 7. PMID: 41466573.

6- MSC administration resolves experimental acute gout increasing specialized pro-resolving mediators synthesis through a super-induction of prostaglandin E<sub>2</sub>. Bermejo-Álvarez I, Vázquez C, Irigaray-Moreno A, Quevedo-Romero I, **Mediero A**, Herrero-

Beaumont G, Largo R. Stem Cell Res Ther. 2025 Dec 25;17(1):53. doi: 10.1186/s13287-025-04877-3. PMID: 41449409.

7.- Beyond joints: the importance of animal models in exploring rheumatoid arthritis comorbidities. Marco-Bonilla M, Fresnadillo M, de la Riva-Bueno M, Herrero-Beaumont G, González-Gay MA, Largo R, **Mediero A**. Front Med (Lausanne). 2025 Nov 5;12:1693610. doi: 10.3389/fmed.2025.1693610. eCollection 2025. PMID: 41267875.

8.- P3MA: A Promising Mycobacteriophage Infecting *Mycobacterium abscessus*. Broncano-Lavado A, Aguilera-Correa JJ, Roquet-Banères F, Kremer L, **Mediero A**, Seoane-Blanco M, van Raaij MJ, Pagán I, Esteban J, García-Quintanilla M. Antibiotics (Basel). 2025 Aug 6;14(8):801. doi: 10.3390/antibiotics14080801. PMID: 40867995.

9.- Impact of intra-articular high-concentration hyaluronic acid administration on the innate immune response in experimental knee osteoarthritis. Herrero-Beaumont G, Marco-Bonilla M, Migliore A, López-Reyes A, Irigaray-Moreno A, **Mediero A**, Largo R. BMC Musculoskelet Disord. 2025 Aug 12;26(1):778. doi: 10.1186/s12891-025-09061-5. PMID: 40797305.

10.- Animal Models in Rheumatoid Arthritis: Is There a Correlation Between Autoantibodies in Human Pathology and Animal Models? Marco-Bonilla M, Fresnadillo M, de la Riva-Bueno M, Herrero-Beaumont G, Largo R, **Mediero A**. Biology (Basel). 2025 Apr 24;14(5):460. doi: 10.3390/biology14050460. PMID: 40427650.

11.- Aberrant anabolism hinders constructive metabolism of chondrocytes by pharmacotherapy in osteoarthritis. Largo R, **Mediero A**, Villa-Gomez C, Bermejo-Alvarez I, Herrero-Beaumont G. Bone Joint Res. 2025 Mar 5;14(3):199-207. doi: 10.1302/2046-3758.143.BJR-2024-0241.R1. PMID: 40042132.

12.- Arthroscopy has a higher discriminative capacity than MRI in detecting mild cartilage lesions. Sánchez-Platero I, Fernández-Jara J, Herencia C, Llorca J, **Mediero A**, Calvo E, Largo R, Herrero-Beaumont G. Rheumatology (Oxford). 2025 May 1;64(5):3019-3027. doi: 10.1093/rheumatology/keae591. PMID: 39437013.

13.- Corrigendum: MSC therapy ameliorates experimental gouty arthritis hinting an early COX-2 induction. Medina JP, Bermejo-Álvarez I, Pérez-Baos S, Yáñez R, Fernández-García M, García-Olmo D, **Mediero A**, Herrero-Beaumont G, Largo R. Front Immunol. 2023 Dec 6;14:1345777. doi: 10.3389/fimmu.2023.1345777. eCollection 2023. PMID: 38124755.

14.- Energy Regulation in Inflammatory Sarcopenia by the Purinergic System. Marco-Bonilla M, Fresnadillo M, Largo R, Herrero-Beaumont G, **Mediero A**. Int J Mol Sci. 2023 Nov 29;24(23):16904. doi: 10.3390/ijms242316904. PMID: 38069224

15.- Dipyrindamole activates adenosine A2B receptor and AMPK/cAMP signaling and promotes myogenic differentiation of myoblastic C2C12 cells. Marco-Bonilla M, Herencia R, Fresnadillo M, Huete-Toral F, Carracedo G, Largo R, Herrero-Beaumont

G, **Mediero A.** Front Pharmacol. 2023 Sep 12;14:1247664. doi: 10.3389/fphar.2023.1247664. eCollection 2023. PMID: 37771723.

**16.-** Effects of Tofacitinib on Muscle Remodeling in Experimental Rheumatoid Sarcopenia. Bermejo-Álvarez I, Pérez-Baos S, Gratal P, Medina JP, Largo R, Herrero-Beaumont G, **Mediero A.** Int J Mol Sci. 2023 Aug 24;24(17):13181. doi: 10.3390/ijms241713181. PMID: 37685986.

**17.-** MSC therapy ameliorates experimental gouty arthritis hinting an early COX-2 induction. Medina JP, Bermejo-Álvarez I, Pérez-Baos S, Yáñez R, Fernández-García M, García-Olmo D, **Mediero A,** Herrero-Beaumont G, Largo R. Front Immunol. 2023 Jul 18;14:1193179. doi: 10.3389/fimmu.2023.1193179. eCollection 2023. PMID: 37533852.

**18.-** The Antimicrobial Activity of Micron-Thin Sol-Gel Films Loaded with Linezolid and Cefoxitin for Local Prevention of Orthopedic Prosthesis-Related Infections. Toirac B, Aguilera-Correa JJ, **Mediero A,** Esteban J, Jiménez-Morales A. Gels. 2023 Feb 23;9(3):176. doi: 10.3390/gels9030176. PMID: 36975625.

**19.-** Novel alendronate-CGS21680 conjugate reduces bone resorption and induces new bone formation in post-menopausal osteoporosis and inflammatory osteolysis mouse models. Larrañaga-Vera A, Toti KS, Flatow JS, Haraczy AJ, Warnick E, Rao H, Gao ZG, Sussman SM, **Mediero A,** Leucht P, Jacobson KA, Cronstein BN. Arthritis Res Ther. 2022 Dec 9;24(1):265. doi: 10.1186/s13075-022-02961-0. PMID: 36494860.

**20.-** Antibacterial Capability of MXene ( $\text{Ti}_3\text{C}_2\text{T}_x$ ) to Produce PLA Active Contact Surfaces for Food Packaging Applications. Santos X, Álvarez M, Videira-Quintela D, **Mediero A,** Rodríguez J, Guillén F, Pozuelo J, Martín O. Membranes (Basel). 2022 Nov 15;12(11):1146. doi: 10.3390/membranes12111146. PMID: 36422137.

**21.-** Antibiotic delivery from bone-targeted mesoporous silica nanoparticles for the treatment of osteomyelitis caused by methicillin-resistant *Staphylococcus aureus*. Aguilera-Correa JJ, Gisbert-Garzarán M, **Mediero A,** Fernández-Aceñero MJ, de-Pablo-Velasco D, Lozano D, Esteban J, Vallet-Regí M. Acta Biomater. 2022 Dec;154:608-625. doi: 10.1016/j.actbio.2022.10.039. Epub 2022 Oct 28. PMID: 36341887.

**22.-** Hybrid Nanosystems Based on Nicotinate-Functionalized Mesoporous Silica and Silver Chloride Nanoparticles Loaded with Phenytoin for Preventing *Pseudomonas aeruginosa* Biofilm Development. Ugalde-Arbizu M, Aguilera-Correa JJ, **Mediero A,** Esteban J, Páez PL, San Sebastian E, Gómez-Ruiz S. Pharmaceuticals (Basel). 2022 Jul 18;15(7):884. doi: 10.3390/ph15070884. PMID: 35890182.

**23.-** 6-Shogaol (enexasogol) treatment improves experimental knee osteoarthritis exerting a pleiotropic effect over immune innate signalling responses in chondrocytes. Gratal P, **Mediero A,** Lamuedra A, Matamoros-Recio A, Herencia C, Herrero-Beaumont G, Martín-Santamaría S, Largo R. Br J Pharmacol. 2022 Nov;179(22):5089-5108. doi: 10.1111/bph.15908. Epub 2022 Aug 9. PMID: 35760458.

**24.-** Blocking chondrocyte hypertrophy in conditional Evc knockout mice does not modify cartilage damage in osteoarthritis. Lamuedra A, Gratal P, Calatrava L, Ruiz-Perez VL, Palencia-Campos A, Portal-Núñez S, **Mediero A**, Herrero-Beaumont G, Largo R. *FASEB J.* 2022 Apr;36(4):e22258. doi: 10.1096/fj.202101791RR.PMID: 35334131.

**25.-** Effect of Gold Nanostars Plus Amikacin against Carbapenem-Resistant *Klebsiella pneumoniae* Biofilms. Aguilera-Correa JJ, García-Álvarez R, **Mediero A**, Esteban J, Vallet-Regí M. *Biology (Basel)*. 2022 Jan 20;11(2):162. doi: 10.3390/biology11020162.PMID: 35205029.

**26.-** Tenofovir Modulates Semaphorin 4D Signaling and Regulates Bone Homeostasis, Which Can Be Counteracted by Dipyrindamole and Adenosine A2A Receptor. Llamas-Granda P, Martín-Rodríguez L, Largo R, Herrero-Beaumont G, **Mediero A**. *Int J Mol Sci.* 2021 Oct 25;22(21):11490. doi: 10.3390/ijms222111490.PMID: 34768920.

**27.-** Arabic gum plus colistin coated moxifloxacin-loaded nanoparticles for the treatment of bone infection caused by *Escherichia coli*. Aguilera-Correa JJ, Gisbert-Garzarán M, **Mediero A**, Carias-Cálix RA, Jiménez-Jiménez C, Esteban J, Vallet-Regí M. *Acta Biomater.* 2022 Jan 1;137:218-237. doi: 10.1016/j.actbio.2021.10.014. Epub 2021 Oct 13.PMID: 34653694.

**28.-** ATP transporters in the joints. Larrañaga-Vera A, Marco-Bonilla M, Largo R, Herrero-Beaumont G, **Mediero A**, Cronstein B. *Purinergic Signal.* 2021 Dec;17(4):591-605. doi: 10.1007/s11302-021-09810-w. Epub 2021 Aug 15.PMID: 34392490.

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