

Part A. PERSONAL INFORMATION

Name: Nerea Méndez Barbero,

Principal Investigator Vascular Pathology Laboratory at Health Research Institute of the Fundación Jiménez Díaz (IIS-FJD),

URL Web <https://orcid.org/0000-0003-1620-3067>

Email Address nerea.mendez@quironsalud.es

Part B. CV SUMMARY

Nerea Méndez Barbero is a Principal Investigator at the Vascular Pathology Laboratory of the Health Research Institute of the Fundación Jiménez Díaz (IIS-FJD), Madrid, Spain, where she leads a research programme focused on the *molecular mechanisms underlying pathological vascular remodelling* and the identification of novel therapeutic and diagnostic targets for cardiovascular disease. Her research sits at the interface of vascular biology, cardiovascular medicine and translational research, with a *particular focus on endothelial–vascular cell communication, atherosclerosis* and aortic disease. She obtained her degree in Biology from the Autonomous University of Madrid (UAM) in 2008, completing her final year at the University of East Anglia (UEA), UK, where she conducted her research project at the Biomedical Research Centre. She subsequently completed a Master's degree in Biomedicine at the *National Centre for Cardiovascular Research (CNIC)*, Madrid, and obtained her *PhD in Biochemistry, Molecular Biology, Biomedicine and Biotechnology* in 2014, receiving the Special Doctorate Award. Her international research training includes a research placement at *Boston University's Whitaker Cardiovascular Institute* and a subsequent research stay at the *Vascular Translational Science Laboratory (LVTS), INSERM, Paris*, supported by Postdoctoral and *International Atherosclerosis Society Fellowships*. These experiences established a strong international network that continues to support her research programme. Following her PhD, she investigated vascular remodelling in Marfan syndrome, contributing to research that led to patented discoveries. From 2016, she developed her research programme at IIS-FJD through successive Juan de la Cierva-Formación and Juan de la Cierva Incorporación fellowships, followed by a Miguel Servet research position from 2020. *Since 2020, she established her own independent research group as a Principal Investigator.* Her group has developed advanced *in vitro* vascular co-culture models that enable the study of cellular interactions under physiologically relevant pathological conditions. A major focus of her research is the role of Annexin A8 in atherosclerosis and, in particular, its contribution to endothelial cell phenotypic modulation. This work has generated multiple peer-reviewed publications and *two patent applications* (PCT/EP2025/083601 and PCT/EP2025/083545), demonstrating the translational potential of her research. She has established *collaborations with internationally recognised researchers in vascular biology*, including Professor Benoît Ho-Tin-Noé (INSERM, France) and Professor Ursula Rescher (Germany), alongside collaborations with national partners and researchers within the *INMUNO-VAR Consortium* at the Spanish National Center for Cardiovascular Research (CNIC). Her track record demonstrates sustained success in securing *competitive research funding* from national and international sources, including the *Carlos III Health Institute (ISCIII)*, the *Spanish Society of Atherosclerosis*, the *L'Oréal-UNESCO For Women in Science Programme*, *CIBERCV*, the *International Atherosclerosis Society* and the *Community of Madrid*. Her expertise in preclinical vascular models has also led to a private research and service agreement with *Italpharma S.L.*, established in 2022. Her scientific output includes 35 publications and an *h-index* of 23, with more than 75% of them in first decile (D1). She has acted as first and corresponding/co-corresponding author on multiple publications, demonstrating her scientific leadership and increasing independence. In 2021, she was recognized by the *L'Oréal-UNESCO For Women in Science Programme* as one of the five leading female scientists in Spain, in recognition of her scientific career. Nerea is also strongly committed to researcher training and career development. Her group has supervised three completed PhD theses and three Master's dissertations and has secured competitive funding to support the development of early-career researchers (PhD fellowships). Alongside her research, she contributes to *university teaching, PhD supervision*, peer review and public engagement, with a particular commitment to *promoting the visibility and participation of women in science*. Through collaborations with universities, schools and *patient associations*, she actively contributes to scientific outreach and societal engagement. This combination of scientific expertise, international experience, independent research leadership, translational potential and commitment to researcher development provides a strong foundation for establishing and expanding international collaborations.

Part C. RELEVANT ACCOMPLISHMENTS

General quality indicators of scientific production

Nerea Méndez Barbero (ORCID: 0000-0003-1620-3067) h-index: 23 - 35 publications, 13 of which have been indexed in PubMed over the last five years of her career as a Principal Investigator, including five publications in the top quartile (Q1) of high impact journals such as the *European Heart Journal* (IF 45.6), *Science Advances* (IF 13.9), *Allergy* (IF 11.3) and *Clinical and Translational Medicine* (IF 7.9), with five publications as corresponding or co-corresponding author.

C.1. Publications related to the proposal over the past 5 years AC: corresponding author. (nº x / nº y): position / total authors.

- 1 L Palacio-García; S Fernández-Bravo; I de María-Camacho; et al; **(14/14) N MENDEZ-BARBERO (AC)**. 2026. Endothelial Glycocalyx Shedding Emerges as a Dual Marker for Treatment and Diagnosis in Anaphylaxis. *J Invest Allergol Clin Immunol*. <https://doi.org/10.18176/jiaci.1190>
2. I San Sebastián-Jaraba; R Blázquez-Serra; M Flores-Muñoz; MJ Fernández-Gómez; S Sanz-Andrea; JL Martín-Ventura; **(7/8) N MENDEZ-BARBERO**; LM Blanco-Colio. 2026. Metalloproteinase 25 promotes abdominal aortic aneurysm and atherosclerosis. <https://doi.org/10.1016/j.atherosclerosis.2026.120676>
3. A Rochano-Ortiz; I San Sebastián-Jaraba; C Zamora; et al; J Oller; **(26/28) N MENDEZ-BARBERO**. 2025. Excessive glycosylation drives thoracic aortic aneurysm formation through integrated stress response. *Eur Heart J*. <https://doi.org/10.1093/eurheartj/ehaf556>
4. A Marcos-Ríos; A Rochano-Ortiz; **(3/4) N MENDEZ-BARBERO (AC)**; J Oller. 2025. Defective Mitochondrial Respiration in Hereditary Thoracic Aneurysms. <https://doi.org/10.3390/cells14110768>
- 5 C Gutiérrez-Muñoz; R Blázquez-Serra; I San Sebastián-Jaraba; et al; LM Blanco-Colio *; **(14/15) N MENDEZ-BARBERO* (AC)**. 2025. Annexin A8 deficiency delays atherosclerosis progression. <https://doi.org/10.1002/ctm2.70176>
- 6 I San Sebastián-Jaraba; MJ Fernández-Gómez; R Blázquez-Serra; S Sanz-Andrea; LM Blanco-Colio; **(6/6) NEREA MENDEZ-BARBERO. (AC)** 2024. In vitro 3D co-culture model of human endothelial and smooth muscle cells to study pathological vascular remodeling. <https://doi.org/10.1016/j.arteri.2024.03.007>
- 7 R Roldán-Montero; J Perez-Saez; I Cerro-Pardo; et al; JL Martín-Ventura; **(9/16) NEREA MENDEZ-BARBERO**. 2022. Galectin-1 prevents pathological vascular remodeling in atherosclerosis and abdominal aortic aneurysm. *Sci Adv*. <https://doi.org/10.1126/sciadv.abm7322>
8. S Fernandez-Bravo; M Canyelles; A Martín-Blázquez; et al; V Esteban; **(12/15) N MENDEZ-BARBERO**. 2024. Impaired high-density lipoprotein function and endothelial barrier stability in severe anaphylaxis. *J Allergy Clin Immunol*. <https://doi.org/10.1016/j.jaci.2024.03.031>
- 9 **(1/20) NEREA* MENDEZ-BARBERO**; LM* Blanco-Colio; A Pello; et al; J Tuñón. 2021. MCP-1 predicts recurrent cardiovascular events in patients with persistent inflammation. doi: 10.3390/jcm10051137.
- 10 D Marcos-Ríos; A Rochano-Ortiz; I San Sebastián-Jaraba; MJ Fernández-Gómez; **(5/6) N MENDEZ-BARBERO (AC)**; J Oller. 2025. Mitochondrial Dysfunction: A New Hallmark in Hereditary Thoracic Aortic Aneurysm Development. *Cells*. <https://doi.org/10.3390/cells14080618>.
- 11 **(1/5) N MENDEZ-BARBERO**; I San Sebastián-Jaraba; R Blázquez-Serra; JL Martín-Ventura; LM Blanco Colio. 2022. Annexins and cardiovascular diseases: Beyond membrane trafficking and repair. *Front Cell Dev Biol*. <https://doi.org/10.3389/fcell.2022.1000760>
12. N Fernández-Gallego; **(2/22) R Castillo-González; N MENDEZ-BARBERO**; et al; R Jiménez-Saiz. 2022. The impact of type 2 immunity and allergic diseases in atherosclerosis. *Allergy*. <https://doi.org/10.1111/all.15426>.
- 13 **(1/3) N MENDEZ BARBERO (AC)**; Carmen Gutierrez-Muñoz; Luis Miguel Blanco-Colio. 2021. Cellular Crosstalk between Endothelial and Smooth Muscle Cells in Vascular Wall Remodeling. doi: 10.3390/ijms22147284.

C.3. Research projects and contracts over the past 5 years as Principal Investigator

- 1 Project. Grants for R&D Programs in *HEALTH 2025 MADRID CONSORTIUM*. N MENDEZ-BARBERO. (Health Research Institute of the Fundación Jiménez Díaz). 01/2027- 12/2030. 163.000 €. **Principal investigator**.
- 2 Project. *Spanish National R&D&I Projects, AES2024 (PI24/00180)*. N MENDEZ-BARBERO. (Health Research Institute of the Fundación Jiménez Díaz). 01/2025- 12/2027. 152.000 €. **Principal investigator**.
- 3 Project. *Spanish National R&D&I Projects, AES2021: (PI21/01126)* New mediators of cellular communication between the endothelium and smooth muscle in pathologies of vascular remodeling. A translational study. Carlos III Health Institute. N MENDEZ-BARBERO. (Health Research Institute of the Fundación Jiménez Díaz). 01/2022-06/2026. 141.570 €. **Principal investigator**.
- 4 Project. *16th CALL FOR RESEARCH GRANTS (Santander/Universities)*. 2024. (Health Research Institute of the Fundación Jiménez Díaz). 01/2024-12/2025. **Principal investigator**.
- 5 Project. 16th EDITION - 2021 *L'ORÉAL-UNESCO RESEARCH AWARDS* For Women in Science. (Health Research Institute of the Fundación Jiménez Díaz). 01/2022- 12/2023. 15.000 €. **Principal investigator**.
- 6 Project. *International Atherosclerosis Society Fellowship Award* 2018 "Role of Annexin A8 in cell recruitment during the development of atherosclerosis" .. (Inserm, Paris). 09/2018- 03/2019. 5.000 €. **Principal investigator**.

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

- 1 Patent of invention. V Esteban; **N MENDEZ-BARBERO**. *PCT/EP2025/083601*. Glycosaminoglycan, or pharmaceutical composition comprising thereof, for use in a method for the prevention and/or treatment of anaphylaxis Spain. 27/05/2026. Health Research Institute of the Fundación Jiménez Díaz.
- 2 Patent of invention. **N MENDEZ-BARBERO**; LM Blanco-Colio. *PCT/EP2025/083545*. Treatment and/or prevention of atherosclerosis Spain. 27/05/2026. Health Research Institute of the Fundación Jiménez Díaz.
- 3 Patent of invention. **N MENDEZ-BARBERO**; Jorge Oller; Miguel Campanero; Juan Miguel Redondo. EP 16 382 103.6. In vitro method for identifying thoracic aortic aneurysms (TAA) in a subject. AU2016396401A1; BR112018068045A2; CA3017042A1; EP3427061A1; JP2019510081A; US17/122,962 (patents pending); US10907135B2 (patent granted). Licensed.