

ACADEMIC AND PROFESIONAL BIOGRAPHY OF DOCTOR FRANCISCO JAVIER BLANCO GARCIA
Rheumatologist

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<https://www.ncbi.nlm.nih.gov/myncbi/1-M5uBgeaCukr/bibliography/public/>
<https://girblanco.com>

Dr. Francisco J Blanco García, born in the town of Cee, A Coruña, completed his studies in Medicine and Surgery at the University of Santiago de Compostela and specialized in Rheumatology at the 12 de Octubre Hospital in Madrid (1989-92). He enjoyed a BAE from the ISCIII as a Research Fellow at the University of California-San Diego (La Jolla), USA (1993-94) and received his PhD from the University of A Coruña (UDC) in 1998, with an Extraordinary Prize. From 1998 to 2022, he was the founding scientific director of the INIBIC (Biomedical Research Institute of A Coruña), participating in its accreditation and reaccreditation by the ISCIII in 2015 and 2020, respectively.

Currently, he is a **Professor of Rheumatology** at the University of A Coruña, Head of the Clinical and Translational Rheumatology Section at the A Coruña University Hospital, and Coordinator of the Rheumatology-Health Research Group at INIBIC and CICA-UDC. He is a Corresponding Academic of Rheumatology of the Royal National Academy of Medicine of Spain and the Royal Academy of Medicine and Surgery of Galicia and has received the "Pedro Barrié de la Maza Foundation" award from this academy on three occasions, in 2003, 2006, and 2017.

In the **University activity**, it should be noted that between 2005 and 2018 he directed the "Cátedra-Bioibérica" in Cellular Therapy and Regenerative Medicine at the UDC, which studies the degradation and reconstruction of articular cartilage. He has recently been appointed Director of the San Rafael-UDC Foundation Chair, whose mission is to stimulate biomedical research, promote healthy lifestyles, design training programs, and organize forums and activities aimed at medical professionals, researchers, and society in general. As part of the activities carried out in this Chair, Dr. Blanco offers a solidarity consultation (one day a week and altruistically) for patients sent from three Galician patient associations: the Galician League of Rheumatology, the Galician Association of Lupus, and the Galician Association of Chronic Diseases. Additionally, he is a professor in several postgraduate courses, including the Official Master's Degree in Health Care and Research (UDC), the Official Master's Degree in Molecular, Cellular, and Genetic Biology (inter-university UDC-UVigo), the Official Master's Degree in Advanced Biotechnology (UDC), and the Master's Degree in Bioinformatics (UDC), and coordinates the Official PhD Program in Health, Disability, Dependence, and Well-being at the same university.

Dr. Blanco leads the **Rheumatology Research Group (GIR-S)** of the INIBIC and the UDC. GIR (<https://girblanco.com>) is a highly multidisciplinary group composed of 51 professionals: clinical and basic researchers with complementary profiles, including rheumatologists, nurses, biologists, statisticians, pharmacists, chemists, and other support staff. The group develops translational research in the field of rheumatic diseases with the aim of improving the health of rheumatology patients. Its scientific program revolves around 6 clinical areas (osteoarthritis, rheumatoid arthritis, spondyloarthropathies, connective tissue diseases, osteoporosis, and microcrystalline arthritis), and its priority research lines include the search for diagnostic, prognostic, and therapeutic response proteomic and genomic biomarkers of rheumatic diseases, and the study of their genetic, epigenetic, and molecular bases. In fact, Dr. Blanco is currently a world reference in basic and clinical research on rheumatic diseases, particularly osteoarthritis, as evidenced by the Basic Science Award granted to his scientific career in 2017 by the OARSI (Osteoarthritis Research Society International), being the first Spanish researcher and the 5th European to achieve it since its foundation in 1992.

International Rheumatologist

Dr. Blanco has a long history of contributions to various scientific societies at the international level, particularly to **OARSI**, the main global scientific association dedicated to research on osteoarthritis. He has been a member since 1997 and has been involved in its management since 2002, first as a Board Member (2003-2009) and then as Secretary General (2009-2015). He also collaborated as Chair of the Research & Training Committee (2009-2013), where he promoted and initiated the collaborative Scholarships/Awards program. This program has allowed many young researchers to undertake national and international exchange stays to improve their skills and education. He also served as a member of the Ethics & Governance Committee (2015-2018) of this society. He was Chair of the OARSI World Congresses on Osteoarthritis held in Barcelona in 2010 and in Philadelphia, USA in 2013, and co-Chair in the edition held in Barcelona in 2012. He also contributed as a member of the scientific committee in the editions of the World Congress in 2008 and 2011 in Rome and San Diego, respectively. He continues to contribute to the objectives of OARSI in many other capacities.

He has been a member of the **American College of Rheumatology (ACR)** since 1994, where he has participated as a reviewer of abstracts for its annual congress on several occasions and was the first Spanish rheumatologist appointed as Co-Chair of the scientific program of its national congress during the years 2018-2021. He has also been invited as a moderator and as a speaker in plenary conferences on several occasions. Dr. Blanco collaborates with the

European League Against Rheumatism (EULAR). He is a founding member of the EULAR Study Group in OA (SGOA), created in May 2015. Since 2011, he has been an expert in rheumatic diseases of the **European Medicine Agency (EMA)** and between 2017 and 2019, he was the Substitute Representative of the Doctors in its Committee on Advanced Therapies (CAT-EMA). He is also a member of the **Human Proteome Organization (HUPO)** and has been participating in the Human Proteome Project (HPP) since 2012, being the Spanish coordinator of the Biology/Disease Initiative (B/D-HPP) and founder and Chair of the Rheumatic Autoimmune Diseases (RAD)-Initiative since its creation in 2018.

At the **Ibero-American level**, he has been invited to give lectures and attend Rheumatology congresses in Colombia, Venezuela, Chile, and Brazil. He maintains a special relationship with the Mexican Rheumatology. He is an Honorary Member of the Mexican College of Rheumatology, and since 2010, Dr. Blanco has been involved in a collaboration agreement signed by INIBIC and the National Rehabilitation Institute (Mexico City, Mexico), with Dr. Luis Guillermo Ibarra as General Director. The objective of this agreement is "to promote collaboration between both parties in the field of their specialties in order to carry out activities in academic-scientific areas, as well as to seek the training, education, and updating of professional personnel, which allows the continuity of the educational process, providing both parties with facilities to carry out internal academic plans, internships, social service, professional practices, and medical residencies." Since its signing, 8 medical professionals have benefited from this agreement by carrying out research and specialization stays under the supervision of Dr. Blanco at INIBIC

Spanish Rheumatologist

Dr. Blanco is also very actively involved in the activities of the **Spanish Society of Rheumatology (SER)**. Between 2001 and 2004, he was a member of its Board of Directors and coordinator of the Society's scientific program (2002-2003). He was a Trustee of the Foundation of the Spanish Society of Rheumatology between 2012 and 2018, and represented the SER on the Education and Training Committee of the European League Against Rheumatism (EULAR, 2013-2016). He was the representative of the SER for the European Horizon 2020 Program for Personalized Medicine (2013-2016). He organized the Molecular Biology Course for SER Residents held in A Coruña between 2002-2011 (5 editions) and currently coordinates the Precision Medicine Course for rheumatologists, which will hold its third edition in 2023. He is also a member of the SER Working Group on osteoarthritis (ARTROSER). He was part of the Scientific Committee of the Prevalence Study of Rheumatic Diseases in the Adult Population in Spain (EPISER 2016), being the principal

investigator of the part related to osteoarthritis (FJ Blanco et al, Prevalence of symptomatic osteoarthritis in Spain: EPISER2016 Study. Reumatol Clin. 2020. doi:10.1016/j.reuma.2020.01.008). He has been part of the Scientific Committee of the Annual Congress of the SER for the last 15 years. Since 2013, he has been the **Editor-in-Chief of Clinical Rheumatology**, the official journal of the Spanish Society of Rheumatology and the Mexican College of Rheumatology, and as Editor-in-Chief, he has collaborated to ensure that the journal has an Impact Factor from 2023 onwards. He was Director of the Node of the National Proteomics Network of the ISCIII (ProteoRed) in A Coruña and a member of the current RICORS-REI of the ISCIII (former RIER: Network of Inflammation and Rheumatic Diseases).

Dr. Blanco was the Research Coordinator of the Juan Canalejo Hospital from 1999 to 2008, when he was appointed Scientific Director of the INIBIC, a position he held until February 2022. He was President of the Research Commission of the Juan Canalejo Hospital from 1998 to 2015. He was a member of the Galician Research Ethics Committee. He was an Associate Professor of Rheumatology at USC from 2010 to 2019. He was **President of the Galician Society of Rheumatology** between 2004 and 2008. He has always collaborated with the main patient associations for rheumatological diseases in Galicia (the Galician Rheumatology League, the Galician Lupus Association, and the Galician Association of Chronic Diseases), where he acts as an advisor and offers a solidarity consultation for patients referred by these associations. This cooperative work has been rewarded with several awards from these associations.

Rheumatologist-Researcher

Throughout his scientific career he has been **PI in 54 national competitive research projects** and has participated as a collaborator in another 36. He has participated in **4 European projects and 6 with the NIH (National Institutes of Health, USA)**. He also has 8 granted patents and one more requested. He has published more than 900 scientific papers of which **412 are JCR papers** (including journals such as Nat Rev Rheumatol and Ann Rheum Dis) that accumulate more than 19,600 total citations and his current **H index (ISI WoS) is 71 (RID C-3192- 2014)**. In Google Scholar, it accumulates 26,464 total citations and its H index is 83. It **ranks 2nd among active rheumatologists in the ranking of residents in Spain**, in the Rheumatology category (<http://indiceh.webcindario.com/salud.html#RHEUMATOLOGY>). Dr. Blanco is the **most cited author worldwide** and with the greatest bibliometric impact in the area of mitochondria and joint disease (doi: 10.1186/s12891-022-05911-8). He is also **ranked 3rd as a world expert on chondrocytes** (<https://expertscape.com/ex/chondrocytes>) and **17th as a world expert on**

osteoarthritis in the global Expertscape database (<https://expertscape.com/ex/osteoarthritis>)

He is co-author of nearly **50 book chapters**, including the chapter on Osteoarthritis in the Internal Medicine book by **Farreras/Rozman/Cardellach** (Elsevier España S.L.) in its XVI (2009), XVII (2012), XVIII (2016) and XIX (2019) editions, and the chapter "Osteoarthritis" in the Oxford Textbook of Geriatric Medicine, ed. by JP Michel, BL Beattie, FC Martin and JD Walston and published by OUP in 2018. He is also Chief Editor, together with J Tornero, of the Treatise on Rheumatic Diseases of the Spanish Society of Clinical Rheumatology (Ed. 2018). He is a member of the Editorial Board of the journals Osteoarthritis & Cartilage-Philadelphia-USA, Osteoarthritis & Cartilage-Open, and Scientific Reports of the Nature group. He also acts as a reviewer for many other peer-reviewed journals.

Dr. Blanco has supervised numerous medical students and researchers. He has **directed 33 doctoral theses** (plus another 11 currently in progress), 17 master's degree projects and 14 degree projects. Several of his former doctoral students have continued their academic and scientific careers at prestigious national and international institutions. To name a few: 1. Dr. Berta Cillero-Pastor, Maastricht Multimodal Molecular Imaging Institute (M4I), The Netherlands; 2. Dr. Emma Muñíos López, Departments of Orthopedic Surgery and Cell Biology, NYU Langone Health, New York, USA; 3. Dr. Carolina Fernández Costa, Yates Lab, Department of Chemical Physiology, The Scripps Research Institute, La Jolla, California, USA; 4. Dr. Ángel Soto Hermida, Ophthalmology Department, Shiley Eye Institute, University of California, San Diego, USA; 5. Drs. Silvia Díaz Prado, and María Arufe Gonda, Full Professors, Dept. of Physiotherapy, Medicine and Biomedical Sciences, UDC.

During his career, Dr. Blanco has been invited to present his findings at more than 500 national and international conferences, including those of SER, the American College of Rheumatology, EULAR, the Pan-American League of Rheumatology (PANLAR), APLAR (Asian Pacific League of Rheumatology), and the Mexican College of Rheumatology (CMR). He has served as a session chair at these and many other conferences.

He has also participated in the development of several clinical guidelines and consensus articles commissioned by societies such as OARSI, EULAR, OMERACT, or SER, which are highly cited: **1) OARSI guidelines** for the non-surgical management of knee, hip, and polyarticular osteoarthritis. doi: 10.1016/j.joca.2019.06.011 (first Spanish author); **2) 2018 update of the EULAR** recommendations for the management of hand osteoarthritis. doi: 10.1136/annrheumdis-2018-213826; **3) Expert Recommendations** on the Interleukin 6 Blockade in Patients with Rheumatoid Arthritis. doi: 10.1016/j.reuma.2018.07.004; **4) Recommendations by the Spanish Society of**

Rheumatology for the management of patients diagnosed with rheumatoid arthritis who cannot be treated with methotrexate. doi: 10.1016/j.reuma.2016.10.002. **5) EULAR Study group in OA.** Translation of clinical problems in osteoarthritis into pathophysiological research goals. doi: 10.1136/rmdopen-2015-000224; **6) OARSI Clinical Trials Recommendations:** Soluble biomarker assessments in clinical trials in osteoarthritis. doi: 10.1016/j.joca.2015.03.002 (first Spanish author); **7) Call for standardized definitions of osteoarthritis** and risk stratification for clinical trials and clinical use. doi: 10.1016/j.joca.2015.03.036 (first Spanish author); **8) Core outcome measurement instrument selection for physical function** in hand osteoarthritis using the OMERACT Filter 2.1 process. doi: 10.1016/j.semarthrit.2021.08.014; **9) Endorsement of the OMERACT** core domain set for shared decision-making interventions in rheumatology trials: Results from a multi-stepped consensus-building approach. doi: 10.1016/j.semarthrit.2021.03.017.

He has also carried out various **evaluation activities for different funding agencies** for competitive research programs, both nationally and internationally. Notable examples include the UK Research and Innovation (UKRI, 2020) and the 2016 ERC Consolidator Grants Program. He has also been a member of various Technical Evaluation Committees of the ISCIII (Health Research Projects, 2014-2017; HR of Rio Hortega Contracts, Miguel Servet Type II Contracts and Juan Rodés Contracts, 2019), R&D&I Projects, Biotechnology, Bioengineering and Genomic Technologies Area - member of the CIBER Evaluation Committee and member of the RETICs Evaluation Committee. Since 2010, he has been listed as an external expert in the European Commission's database for various funding programs.

Scientific Milestones

- 1. Apoptosis and Nitric Oxide:** Dr. Blanco was the first researcher to identify apoptosis in human joint chondrocytes and associate it with the process of articular cartilage destruction during osteoarthritis, proposing apoptosis of chondrocytes as one of the therapeutic targets in osteoarthritis. He associated this apoptosis with the synthesis of Nitric Oxide. This was a significant change in the pathogenesis of arthritic cartilage destruction since until then, chondrocyte death was caused by necrosis. This finding represented an important turning point in the definition of this disease.
- 2. Mitochondria and Osteoarthritis:** He is a pioneer in the study of the role of mitochondria in osteoarthritis, leading the international study of mitochondrial genetics as biomarkers for the diagnosis, incidence, and prognosis of knee osteoarthritis. He recently proposed the concept of

mitochondrial metabolic inflexibility as one of the main causes of cartilage degradation during osteoarthritis. In 2022, a bibliometric article analyzing the impact of mitochondrial dysfunction on rheumatic diseases was published, reflecting that Dr. Blanco is the most cited author with the greatest bibliometric impact in this area (doi: 10.1186/s12891-022-05911-8).

3. **Proteomics and Osteoarthritis:** His work in the area of proteomics has allowed him to be recognized by OARSI (Worldwide Society for Osteoarthritis Study) as the best researcher in 2017. OARSI recognizes with this award his significant contributions in the field of protein biomarkers and personalized medicine in osteoarthritis. Based on these results, two kits for the diagnosis and treatment of osteoarthritis have been developed (DITOBA Kit, RESTOBA Kit). He is also the Chair of the RAD initiative of the Human Proteome Project (HPP) led by the Worldwide Organization for the Study of the Human Proteome (HUPO) (<https://www.hupo.org/HPP-News/6006525>).
4. **Cellular Therapy with Chondrocytes:** He was the first rheumatologist in Spain to implement autologous implantation of isolated and cultured joint chondrocytes in his own hospital facilities to treat chondral lesions in the knee. For this reason, he was part of the group of experts of the Ministry of Health that launched the supervised use of autologous chondrocyte implantation in Spain and led the project to validate that cellular therapy in clinical practice (Spanish Experience in Autologous Chondrocyte Implantation, *Open Orthop J.* 2010 Jan 15;4:14-21. Doi: 10.2174/1874325001004010014).
5. **Regenerative Medicine:** He directed the "Bioibérica" Chair in Cellular Therapy and Regenerative Medicine at UDC between 2005 and 2018, developing 8 projects in this area focused on tissue engineering strategies for cartilage regeneration with mesenchymal stromal cells (MSCs) from different origins (bone marrow, amniotic membrane, or umbilical cord). He participated in the multicenter trial to evaluate the application of adipose tissue-derived MSCs in rheumatoid arthritis (clinicaltrials.gov: NCT01663116; doi: 10.1136/annrheumdis-2015-208918). During this period, he participated as a member of the Galician Network of Biomaterials and at the national level, of the CIBER of Bioengineering, Biomaterials, and Nanomedicine
6. **Epidemiology of Osteoarthritis:** In 2016, Dr. Blanco led the most important project to obtain epidemiological data on Osteoarthritis in Spain (EPISER2016 of the Spanish Society of Rheumatology). He has also developed the first Osteoarthritis cohort in Spain and one of the best cohorts of OA patients in Europe and internationally, documented in several publications and is part of the best studies and papers for searching for genetic and proteomic markers.

7. **Personalized Rheumatology:** As a result of 20 years of work in search of molecular biomarkers in rheumatic diseases and the creation of rheumatic disease cohorts (the PROCOAC), they have developed the Personalized Rheumatology Platform PR5P, which integrates several instruments to perform precision medicine (DIPROA, DITOBA, RESTOBA, OPTIBIO) for rheumatology patients. A recent agreement has been signed to provide precision rheumatology services to QUIRON hospitals, and it is also being applied to CHUAC patients.

Curriculum Vitae Summary

1. Professor (Full Professor) of Rheumatology at the University of A Coruña.
2. Head of Clinical and Translational Rheumatology Section at the University Hospital of A Coruña.
3. PhD from the University of A Coruña with an Extraordinary Prize in 1998.
4. Scientific Director of INIBIC (ISCIII Accredited Institute) from 2008 to Feb-2022.
5. Corresponding Academic of the Royal National Academy of Medicine of Spain.
6. Corresponding Academic of the Academy of Medicine and Surgery of Galicia.
7. Coordinator of the Rheumatology Research Group (GIR-S) at INIBIC and UDC. Disciplinary group with 51 members and more than 10 million Euros captured in the last 5 years.
8. Director of the Proteomics Platform. INIBIC-ProteoRed-ISCIII. A Coruña.
9. Director of the Galician Node of the National Proteomics Network of ISCIII (ProteoRed).
10. Scientific Coordinator of the Biomarkers Platform of INIBIC in the European Network EATRIS.
11. Chair of the Autoimmune Diseases Initiative-Human Proteome Project. HUPO (World Organization for Human Proteome Study).
12. Coordinator and responsible for the PROCOAC cohort (Prospective Cohort of A Coruña), one of the two best osteoarthritis cohorts in Europe.
13. President of the Galician Society of Rheumatology (2004-2008)
14. Director of the San Rafael-UDC Foundation Chair. University of A Coruña
15. World Organization for OA Research (OARSI): Member of the Steering Committee (2009-2013); Secretary-General (2013-2015); Member of the Ethics Committee (2013-2016) and President of the Research and Teaching Committee (2009-2013).
16. President of the Organizing Committee of 3 International Congresses (OARSI)
17. Honorary Member of the Mexican College of Rheumatology.

18. Co-Chair of the Scientific Committee of Abstracts of the American College of Rheumatology (2019-2021)
19. Member of the EULAR and SER Group for the study of osteoarthritis.
20. Member of OMERACT "Shared Decision-Making Workshop," and "Hand OA."
21. Supervised doctoral theses: 33 (defended, 14 extraordinary prize; 13 international mention), 11 (in progress).
22. Principal Investigator in 54 competitive national research projects, collaborator in 36 others. He has participated in 4 European projects and 6 with the NIH (National Institutes of Health, USA).
23. Co-author in 8 granted patents (1 in exploitation) and one more requested.
24. Co-author in more than 900 scientific publications, of which 412 are JCR papers that accumulate more than 19,600 total citations.
25. H-index (ISI WoS) is currently 71 (RID C-3192-2014). H-index (Google Scholar) is 83, and accumulates 26,464 total citations.
26. Editor-in-Chief of Clinical Rheumatology (official journal of the Spanish Society of Rheumatology and the Mexican College of Rheumatology).
27. Principal Investigator of more than 100 clinical research projects in Rheumatic Diseases.
28. According to the Global Expertise organization, he ranks 3th as a global expert in Chondrocytes and 17th in Osteoarthritis.
29. According to the DIH Group, he ranks 2nd as an active rheumatologist with the best Impact Factor.
30. Collaborator of ISCIII in project evaluation, HR, NETWORKS-RETICs and CIBERs.
31. Awarded as the best researcher in the world in osteoarthritis during 2017 organized by OARSI for his contributions in the field of biomarkers and proteomics in Osteoarthritis. (First and only Spaniard and 5th European to receive it).
32. Awarded 3 times by the Royal Academy of Medicine of Galicia.
33. Expert of the Spanish Agency of Medicines and Medical Devices (AEMPS).
34. Expert in the Area of Rheumatic Diseases in the European Medicines Agency (EMA).
35. Coordinator of the Cellular Therapy Area (2001-2013) and Director of the Chondrocyte Transplantation program (1998-2013) at Juan Canalejo Hospital.
36. Member of the Ministry of Health's group of experts to implement supervised use of autologous chondrocyte implantation in Spain and leader of the validation project of this cellular therapy in clinical practice (Spanish Experience in Autologous Chondrocyte Implantation, Open Orthop J. 2010 Jan 15;4:14-21. doi: 10.2174/1874325001004010014).

37. Member of the Expert Panel of the Ministry of Health's Cellular Therapy Program (2014).
38. Clinicians' Alternate to the Committee of Advanced Therapies, EMA (11/05/2017 - 30/06/2019).
39. Representative of SER in the Horizon 2020 Personalized Medicine Program (2012-2013).