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ESTATAL DE
INVESTIGACIÓN

CV date	27/11/2021
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Part A. PERSONAL INFORMATION

First name	Francisco	
Family name	García García	
Gender (*)	Male	
ID number	52704795L	
e-mail	fgarcia@cipf.es	URL Web: https://bioinfo.cipf.es/ubb/
Open Researcher and Contributor ID (ORCID) (*)	0000-0001-8354-5636	

A.1. Current position

Position	Research group leader		
Initial date	01/02/2018		
Institution	Fundación CV Centro de Investigación Príncipe Felipe (CIPF)		
Department	Bioinformatics & Biostatistics Unit (UBB)		
Country	Spain	Teleph. number	+34 96 328 96 80
Key words	Bioinformatics, Personalized Medicine, Sex Differences, Cancer, Medical Imaging, Biomarkers, Artificial Intelligence, Big Data, Meta-Analysis, Neurodegenerative Diseases, Drugs Repurposing		

A.2. Previous positions

Period	Position/Institution/Country/Interruption cause
01/09/2007-31/01/2018	Researcher at CIPF (Spain)
01/12/2012-31/10/2015	Associate Lecturer at Universidad Politécnica de Valencia (Spain)
01/09/2009-31/01/2012	Associate Lecturer at Universitat de València (Spain)

A.3. Education

PhD, Licensed, Graduate	University	Year
PhD Biotechnology and Biomedicine	Universitat de València	2016
Master in Biostatistics	Universitat de València	2012

Part B. CV SUMMARY

Francisco García finished his bachelor's degree in Statistics in 2001, at the University of Barcelona, specializing in Epidemiology and Biostatistics. In the following years he participated in numerous environmental research projects, in the Valencian School of Health Studies of the Generalitat Valenciana and in several hospitals of the Valencian public network, where the relationship between air pollution and population morbidity and mortality was evaluated. In 2007 he discovered Bioinformatics and Computational Biology when he joined the scientific team of the Department of Computational Genomics, led by Dr. Dopazo, at the Príncipe Felipe Research Center (CIPF). During this period, he did a research stay at the National Institute of Genomic Medicine in Mexico, and he completed his doctorate in Biomedicine and Biotechnology at the University of Valencia, presenting his thesis in 2016 on "New methods of functional enrichment analysis in genomic studies".

Since 2018, he has been the head researcher of the new Bioinformatics and Biostatistics Unit (UBB), whose research activity is focused on the development of new methods and computational resources to improve the characterization of the molecular bases in human diseases. The UBB's lines of research are 1) the development of clinical predictors in neurodegenerative diseases and cancer, based on data



from high-throughput technologies (omics and medical imaging) and Artificial Intelligence methods, and 2) the study of gender and sex differences in biomedical studies using computational approaches.

Francisco García has been teaching continuously since 2006, participating as a university lecturer in undergraduate and master's degrees at numerous universities. Since 2018 he has been a member of the academic committee of the Master's in Bioinformatics at the University of Valencia. He has also participated in more than 70 national and international training activities in Biostatistics, Bioinformatics, Computational Genomics and Personalized Medicine. He has supervised 23 master students and 6 PhD Thesis (ongoing).

It also has a dynamic activity in various scientific and professional entities:

- He is a member of the board of directors of the new SEBBC (Spanish Society for Bioinformatics and Computational Biology).
- His laboratory is part of the TransBioNet network of bioinformatics units associated with health research, which aims to promote Bioinformatics with the Spanish health system.
- He has been the coordinator of the Valencian node of the National Institute of Bioinformatics (INB): 2019- 2021.
- He participates as a reviewer in the scientific journals: "Bioscience, Biotechnology, and Biochemistry", "Bioinformatics", "BMC Genomics", "Biology Direct", "Genes", "NAR", and "Orphanet Journal of Rare Diseases".
- The unit that he leads is integrated into various joint research units with the aim of promoting synergies between entities such as 1) the Valencian Institute of Oncology, 2) the Foundation for the Promotion of Health and Biomedical Research of the Valencian Community (FISABIO), 3) Instituto de Investigación Sanitaria "La Fe" and 4) the University of Valencia, with whom he has been forming the Joint Unit on Biomedical Research with a Gender Perspective since 2018.
- Member of Committee on Animal Research and Ethics, in CIPF since 2018.
- His team is involved in several international research collaborations in Japan, USA, Argentina and European consortiums.

Part C. RELEVANT MERITS

C.1. Scientific papers: 56 in the last 10 years (2012-2021) (source: [PubMed](#)). 10 selected publications (*corresponding author)

1. I Pérez-Díez, MR Hidalgo, P Malmierca-Merlo, F García-García* (10/10). *Functional signatures in non-small-cell lung cancer: a systematic review and meta-analysis of sex-based differences in transcriptomic studies*. Cancers 2021, 13(1), 143; PMID: 33526761.
2. JF Català-Senent, MR Hidalgo, M Berenguer, G Parthasarathy, H Malhi, P Malmierca-Merlo, M de la Iglesia-Vayá, F Garcia-Garcia* (8/8). *Hepatic steatosis and steatohepatitis: a functional meta-analysis of sex-based differences in transcriptomic studies*. Biology of sex Differences. 12 - 1, pp.1 - 12. BioMed Central, 2021. PMID: 33766130.
3. Casanova Ferrer F, Pascual M, Hidalgo MR, Malmierca-Merlo P, Guerri C, García-García F* (6/6). *Unveiling Sex-Based Differences in the Effects of Alcohol Abuse: A Comprehensive Functional Meta-Analysis of Transcriptomic Studies*. Genes (Basel). 2020 Sep 21;11(9). PMID: 32967293.
4. Romera-Giner S, Andreu Martínez Z, García-García E, Hidalgo MR (3/4). *Common pathways and functional profiles reveal underlying patterns in Breast, Kidney and Lung cancers*. Biol Direct. 2021 May 26;16(1):9. PMID: 34039407.
5. Marti-Rodrigo A, Alegre F, Moragrega AB, Blas-Garcia A (4/10). *Rilpivirine attenuates liver fibrosis through selective STAT1-mediated apoptosis in hepatic stellate cells*. Gut. 69-5, pp. 920 - 932. BMJ 2020. PMID: 31530714.



6. Gil-Ibañez P, García-García F, Dopazo J, Bernal J, Morte B (2/5). *Global Transcriptome Analysis of Primary Cerebrocortical Cells: Identification of Genes Regulated by Triiodothyronine in Specific Cell Types*. Cereb Cortex. 2017 Jan 1;27(1). PMID: 26534908.
7. Pascual M, Montesinos J, Marcos M, Torres JL, Costa-Alba P, García-García F, Laso FJ, Guerri C (6/8). *Gender differences in the inflammatory cytokine and chemokine profiles induced by binge ethanol drinking in adolescence*. Addict Biol. 2017 Nov;22(6):1829-1841. PMID: 27699959.
8. García-García F, Panadero J, Dopazo J, Montaner D (1/4). *Integrated gene set analysis for microRNA studies*. Bioinformatics. 2016 Sep 15;32(18). PMID: 27324197.
9. Alemán A, García-García F, Salavert F, Medina I, Dopazo J (2/5). *A web-based interactive framework to assist in the prioritization of disease candidate genes in whole-exome sequencing studies*. Nucleic Acids Res. 2014 Jul;42:W88-93. PMID: 24803668.
10. Alemán A, García-García F, Medina I, Dopazo J (2/4). *A web tool for the design and management of panels of genes for targeted enrichment and massive sequencing for clinical applications*. Nucleic Acids Res. 2014 Jul;42:W83-7. PMID: 24861626.

C.2. Congress

132 contributions between 2012-2021 (57 international contributions). Selected contributions in 14th international meeting of the Organization for the Study of Sex Differences, May 3-6, 2021, USA:

- 1) Big data approaches to detect and understand sex/gender differences in Health. F García-García.
- 2) Unveiling sex-based differences in Parkinson disease: a comprehensive functional meta-analysis of transcriptomic studies. A López-Cerdán, F García-García.
- 3) Sex-based Differences in Multiple Sclerosis: A Systematic Review and Meta-Analysis of transcriptomic studies. JF Català-Senent, F García-García.
- 4) Functional signatures in Alzheimer disease: systematic review and meta-analysis of sex-based differences in transcriptomics studies. A López-Cerdán, F García-García.

C.3. Research projects

1. **DifGenOmics: Study of sex and gender differences in health with omic approaches.** GV/2020/186. Generalitat Valenciana. Projects I+D+I emerging research groups. 01/01/2020-31/12/2021. 15,500 €. PI: F García-García.
2. **FPU Predoctoral grant.** Characterising sex differences in multiple sclerosis disease through meta-analysis and integration of biomedical imaging, transcriptome and microbiome. Mº de Universidades. 2021-2025. 94,000 €. PI: F García-García.
3. **IMPACT: Infraestructura de Medicina de Precisión asociada a la Ciencia y Tecnología.** IMP/00019. Instituto de Salud Carlos III. Ministerio de Ciencia, Innovación y Universidades. 01/01/2021-31/12/2023. 4,549,380 €. Coordinator: A Valencia. Head researcher at CIPF: F García-García.
4. **Bioinformatics Platform. The Spanish National Bioinformatics Institute (INB).** Coordinator: A Valencia. PT17/0009/0015. 01/01/2018-31/12/2020. 31,899.99 €. Head researcher at CIPF: F García-García.
5. **Aid to diagnosis, prognosis and triage of COVID19 patients by applying Artificial Intelligence to clinical-radiological data.** Coordinator: M de la Iglesia. Conselleria de Innovación, Univ., Ciencia y Sociedad Digital. Generalitat Valenciana. 11/04/2020-31/12/2020. 100,000 €. Researcher at CIPF: F García-García.
6. **Biomarkers for precision oncology in lung, colorectal and melanoma cancer.** Agencia Valenciana de Innovación. PI: J Forteza. 31/07/2018-31/12/2018. 100,000 €. Researcher: F García-García.

7. **New strategies for molecular target discovery and design of new therapeutic approaches against cancer.** BIO2014-57291-R. Ministerio de Economía y Competitividad. IP: J Dopazo Blázquez. 01/01/2015-31/12/2017. 302,500 €. Researcher: F García-García.

C.4. Contracts, technological or transfer merits

1. **Detection of immune profiles in inflammatory skin diseases.** PI: F García-García. 01/07/2020-30/06/2021. 11,471 €
2. **Identification of precision immunotherapy biomarkers in cancer.** PI: F García-García. 15/05/2019-14/11/2019. 19,000 €

C.5. Scientific coordination of a singular infrastructure

From February 2018, Francisco García is the scientific coordinator of research activity for an unique facility such as the computational infrastructure of the Príncipe Felipe Research Centre, co-financed by Conselleria de Sanidad Universal y Salud Pública, whose total cost was 900,000 euros. Functionally this infrastructure is a reference because it has been configured as a shared resource for all the units and research centres working in Personalized Medicine in the Valencian Community.

C.6. Scientific dissemination

Continued participation in numerous talks and scientific dissemination activities in various forums aimed at the general public and specialised groups as well: 1) "Descubre Programme" 2015-2018: "Science for teenagers"; 2) Pint of Science 2019, Databeers 2018: "Sex differences in health and big data"; 3) Jornadas de Bioderecho 2019: "Big Data, Artificial Intelligence and Health"; 4) Quart de Poblet Science Week 2018-2019: Big Data and Biomedicine; 5) Guided tours at CIPF 2018-2021: "How to advance cancer research from Bioinformatics and Genomics".

C.7. Publications under review (*corresponding author)

1. *Sex bias evaluation of classic and novel Housekeeping Genes in adipose tissue through the massive analysis of transcriptomics data.* M Guaita-Cespedes, R Grillo-Risco, MR Hidalgo, F García-García* (8/8). bioRxiv 2021 Dec 4. doi: <https://doi.org/10.1101/2021.12.04.471124>
2. *Unveiling sex-based differences in Parkinson Disease: a comprehensive meta-analysis of transcriptomic studies.* A López-Cerdán, Z Andreu, MR Hidalgo, F García-García* (9/9). medRxiv 2021 Oct 25. doi: <https://doi.org/10.1101/2021.10.22.21265376>.
3. *A deep transcriptome meta-analysis reveals sex-based molecular differences in Multiple Sclerosis.* JF Català-Senent, Z Andreu, FJ Roig-Molina, F García-García* (10/10). medRxiv 2021 Sep 2. doi <https://doi.org/10.1101/2021.08.31.21262175>.
4. *MetaFun: Unveiling sex differences in multiple omics studies through comprehensive functional meta-analysis.* P Malmierca-Merlo, R Sanchez-Garcia, R Grillo-Risco, F García-García* (8/8). bioRxiv 2021 Jul 14, doi: <https://doi.org/10.1101/2021.07.13.451905>.

C.8. Development of open-source software

1) MetaFun-AUD (<http://bioinfo.cipf.es/metafun-AUD/>). Web-tool to unveil sex-based differences in the effects of alcohol abuse. F Garcia-Garcia. **2) MetaFun-BC** (<http://bioinfo.cipf.es/metafun-BC/>). Web-tool for functional meta-analysis of DNA Methylation studies in breast cancer. F Garcia-Garcia. **3) MetaFun-NAFLD** (<http://bioinfo.cipf.es/metafun-NAFLD/>). Web-tool to study sex differences in the progression from NAFL to NASH. F Garcia-Garcia.