

CV Date

27/02/2025

Part A. PERSONAL INFORMATION

First Name *	Mireia		
Family Name *	Bustos Aibar		
Sex *	Female	Date of Birth *	25/10/1997
ID number Social Security, Passport *	26503688Y	Phone Number *	(0034) 654813204
URL Web			
Email Address	bustosaibar@gmail.com		
Researcher's identification number	Open Researcher and Contributor ID (ORCID) *		0000-0002-2520-8006
	Researcher ID		
	Scopus Author ID		

* Mandatory

A.1. Current position

Job Title	PFIS RESEARCH FELLOWSHIP (FI23/00042)	
Starting date	2024	
Institution	Instituto de Salud Carlos III	
Department / Centre	/ Instituto de Investigación Sanitaria de Aragón (IIS Aragón)	
Country		Phone Number
Keywords		

A.2. Previous positions

Period	Job Title / Name of Employer / Country
2022 - 2023	YOUNG RESEARCH PERSONNEL - EUROPEAN SOCIAL FUND / UNIVERSITY OF GRANADA

A.3. Education

Degree/Master/PhD	University / Country	Year
MSc IN BIOINFORMATICS AND BIOSTATISTICS	UNIVERSITAT OBERTA DE CATALUNYA	2022
BSc IN BIOLOGY	UNIVERSITY OF GRANADA	2020
Nutrition and Food Science (Ongoing)	University of Granada	

A.4. General quality indicators of scientific production

My scientific activity stands out mainly for using **bioinformatics techniques applied to multi-omics studies** in numerous disciplines, giving great relevance to the **transmission and dissemination of the knowledge** obtained through scientific papers.

Part B. CV SUMMARY

Mireia Bustos Aibar is a Biology graduate with a Master's degree in **Bioinformatics and Biostatistics**. She has gained experience in the field of biomedical research by participating in studies related to **childhood obesity** at the University of Granada from September 2019 to the present. Her academic background and work experience highlight her strong analytical and data management skills, as well as her ability to work collaboratively in research projects. She is currently a predoctoral researcher in her second year of doctoral studies, funded by a PFIS fellowship (Contract PFIS-FI23/00042). Moreover, she has contributed to the MEDKIDS, ADIPOSEQ, GENOBOX, PUBMEP, IBEROMICS, EXOMAIR, and DIVERSE projects, which leverage various omics technologies to identify molecular targets. These efforts aim to unravel the molecular mechanisms underlying obesity in children and young adults or those at risk

of developing it, as well as to identify potential therapeutic targets for precision medicine strategies.

Part C. RELEVANT ACCOMPLISHMENTS

C.1. Publications

AC: corresponding author. (nº x / nº y): position / total authors. If applicable, indicate the number of citations

- 1 **Scientific paper.** Álvaro Torres-Martos; Augusto Anguita-Ruiz; (3/10) Mireia Bustos-Aibar; et al; Jesús Alcalá-Fdez. 2024. Multiomics and eXplainable artificial intelligence for decision support in insulin resistance early diagnosis: A pediatric population-based longitudinal study. Artificial Intelligence in Medicine. 156-102962. <https://doi.org/10.1016/j.artmed.2024.102962>
- 2 **Scientific paper.** (1/10) Bustos-Aibar, M.; Aguilera, C.M.; Alcalá-Fdez, J.; et al; Anguita-Ruiz, A.2023. Shared Gene Expression Signatures Between Visceral Adipose and Skeletal Muscle Tissues Are Associated with Cardiometabolic Traits in Children with Obesity. Computers in Biology and Medicine. Elsevier. 163, pp.107085. <https://doi.org/10.1016/j.combiomed.2023.107085>
- 3 **Scientific paper.** Torres-Martos, A.; (2/8) Bustos-Aibar, M.; Ramirez-Mena, A.; Cámara-Sánchez, S.; Anguita-Ruiz, A.; Alcalá. R.; Aguilera, C.M.; Alcalá-Fdez, J.2023. Omics Data Preprocessing for Machine Learning: A Case Study in Childhood Obesity. Genes. MDPI. 14-2. ISSN 2073-4425. <https://doi.org/10.3390/genes14020248>
- 4 **Scientific paper.** Anguita-Ruiz, A.; (2/7) Bustos-Aibar, M.; Plaza-Díaz, J.; Mendez-Gutierrez, A; Alcalá-Fdez, J.; Aguilera, C.M.; Ruiz-Ojeda, F.J.2021. Omics Approaches in Adipose Tissue and Skeletal Muscle Addressing the Role of Extracellular Matrix in Obesity and Metabolic Dysfunction. International Journal of Molecular Sciences. MDPI. 22-5, pp.2756. ISSN 1422-0067. <https://doi.org/10.3390/ijms22052756>
- 5 **Book chapter.** (1/4) Bustos-Aibar, M.; Torres-Martos, A.; Gil, A.; Aguilera, C.M.2025. Genetic and epigenetic origins of childhood obesity. Childhood Obesity. Academic Press. 3, pp.44-81. ISBN 9780443219757. <https://doi.org/10.1016/B978-0-443-21975-7.00003-4>
- 6 **Book chapter.** (1/3) Bustos-Aibar, M.; Anguita-Ruiz, A.; Piernas, C.2024. Nutrigenética: Variantes genéticas que responden a patrones de alimentación. Gil. Tratado de Nutrición (Tomo II) (4^a ed.). Editorial Médica Panamericana S.A.. 17, pp.393-412. ISBN 9788411061629.
- 7 **Book chapter.** (1/3) Bustos-Aibar, M.; Anguita-Ruiz, A.; Aguilera, C.M.2024. Nutrigenética: variantes genéticas que responden a nutrientes. Gil. Tratado de Nutrición (Tomo II) (4^a ed.). Editorial Médica Panamericana S.A. 16, pp.369-392. ISBN 9788411061629.

C.2. Conferences and meetings

- 1 Domingo-Ajenjo, J.; Bustos-Aibar, M.; Torres-Martos, A.; Bueno, G.; Leis, R.; Anguita-Ruiz, A.; Aguilera, C.M.; Alcalá-Fdez, J.. Comparative analysis of indices to identify children at metabolic risk in the Spanish pediatric population.. XX Congreso Nacional de la Sociedad Española para el Estudio de la Obesidad (SEEDO2024). 2024. Spain. Participatory - oral communication. Conference.
- 2 Bustos-Aibar, M.; Torres-Martos, A.; Bueno, G.; Leis, R.; Alcalá-Fdez, J.; Anguita-Ruiz, A.; Aguilera, C.M.. Epigenetic clocks across pubertal development: Insights into childhood obesity and overweight.. XX Congreso Nacional de la Sociedad Española para el Estudio de la Obesidad (SEEDO2024). Sociedad Española para el Estudio de la Obesidad (SEEDO). 2024. Spain. 'Participatory - poster. Conference.
- 3 Torres-Martos, A.; Bustos-Aibar, M.; Rangel-Huerta, O.; Bueno, G.; Leis, R.; Alcalá-Fdez, J.; Anguita-Ruiz, A.; Aguilera, C.M.. Metabolomic characterization of insulin resistance in the prepubertal and pubertal stage: findings from the PUBMEP study.. XX Congreso Nacional de la Sociedad Española para el Estudio de la Obesidad (SEEDO2024). Sociedad Española para el Estudio de la Obesidad (SEEDO). 2024. Spain. 'Participatory - poster. Conference.

- 4 Torres-Martos, A.; Bustos-Aibar, M.; Rangel-Huerta, O.; et al; Aguilera, C.M.. Association between BCAA catabolism and insulin resistance in children with obesity insulin resistance in children with obesity: findings from the PUBMEP study PUBMEP study. III Conferencia FINUT 2024. Fundación Iberoamericana de Nutrición (FINUT). 2024. Colombia. 'Participatory - poster. Conference.
- 5 Bustos-Aibar, M.; Torres-Martos, A.; Bueno, G.; et al; Aguilera, C.M.. Epigenetic clocks across pubertal development: Insights into childhood obesity and overweight.. III Conferencia FINUT 2024. Fundación Iberoamericana de Nutrición (FINUT). 2024. Colombia. 'Participatory - poster. Conference.
- 6 Silveira-Sanguino, V.; Bustos-Aibar, M.; Torres-Martos, A.; et al; Piernas, C.. Dietary patterns derived by reduced-rank regression and cardiometabolic risk factors: a cross-sectional analysis of the Spanish pediatric cohort IBEROMICS. XXXIII Congreso de la Sociedad Española de Nutrición. Sociedad Española de Nutrición (SEÑ). 2024. Spain. 'Participatory - poster. Conference.
- 7 Bustos-Aibar, M.. Longitudinal investigation of epigenetic clocks: Understanding the impact of obesity and overweight on children's epigenetic age. XXXIII Congreso de la Sociedad Española de Nutrición. Sociedad Española de Nutrición (SEÑ). 2024. Spain. Participatory - oral communication. Conference.
- 8 Brandimonte-Hernández, M.; Torres-MArtos, A.; Bustos-Aibar, M.; et al; Ruiz-Ojeda, F.J.. Serum peptidase D (PEPD) levels are associated with obesity in prepubertal children.. 39 Congreso Nacional SENPE. Sociedad Española de Nutrición Clínica y Metabolismo (SENPE). 2024. Spain. Participatory - oral communication. Conference.
- 9 Brandimonte-Hernandez, M.; Torres-Martos, A.; Ruiz-Ojeda, F.J.; et al; Leis, R.. A novel biomarker of early metabolic complications in pediatric obesity. 56th Annual Meeting of the European Society for Paediatric Gastroenterology, Hepatology and Nutrition. European Society for Paediatric Gastroenterology, Hepatology and Nutrition (ESPGHAN). 2024. Italy. 'Participatory - poster.
- 10 Torres-Martos, A.; Requena, F.; Bustos-Aibar, M.; et al; Bueno, G.. The use of Z-scores as a tool for the study of metabolic syndrome in childhood and adolescence.. 46o Congreso de la Sociedad Española de Endocrinología Pediátrica. SEEP/FSEEP. 2024. Spain. 'Participatory - poster. Conference.
- 11 Torres-Martos, A.; Requena, F.; Bustos-Aibar, M.; Alcalá-Fdez, J.; Bueno, G.; Aguilera, C.M.; Anguita-Ruiz, A.; Leis, R.. Application of Obmetrics software for metabolic risk assessment in children with obesity from a multicenter study.. XXXCongreso Nacional de la Sociedad Española de Gastroenterología, Hepatología y Nutrición Pediátrica. Sociedad Española de Gastroenterología, Hepatología y Nutrición Pediátrica (SEGHNP). 2024. Spain. Participatory - oral communication. Conference.
- 12 Bustos-Aibar, M.; Torres-Martos, A.; Anguita-Ruiz, A.; Ruiz-Ojeda, F.J.; Ruiz, J.R.; Aguilera, C.M.. Effects of a 6-month exercise intervention on skeletal muscle DNA methylation patterns in young adults: the ACTIBATE study. XIX Congreso Nacional de la Sociedad Española para el Estudio de la Obesidad (SEEDO2023). Sociedad Española para el Estudio de la Obesidad (SEEDO). 2023. Spain. Participatory - oral communication. Conference.
- 13 Torres-Martos, M.; Requena, F.; Bustos-Aibar, M.; Alcalá-Fdez, J.; Bueno, G.; Leis, R.; Aguilera, C.M.; Anguita-Ruiz, A.. ObMetrics: a tool for the evaluation of the Metabolic Syndrome in pediatric age.. XIX Congreso Nacional de la Sociedad Española para el Estudio de la Obesidad (SEEDO2024). Sociedad Española para el Estudio de la Obesidad (SEEDO). 2023. Spain. 'Participatory - poster. Conference.
- 14 Aguilera, C.M.; Bustos-Aibar, M.; Anguita-Ruiz, A.; Torres-Martos, A.; Bueno, G.; Leis, R.; Alcalá-Fdez, J.. Leveraging machine learning and genetic risk scores for the prediction of metabolic syndrome in chidren with obesity. 14th European Nutrition Conference FENS. Federation of European Nutrition Societies (FENS Nutrition). 2023. Serbia.
- 15 Torres-Martos, A.; Requena, F.; Bustos-Aibar, M.; Alcalá-Fdez, J.; Bueno, G.; Leis, R.; Aguilera, C.M.; Anguita-Ruiz, A.. A web-based tool for cardiovascular risk assessment in children and adolescents. XXII Congreso de la Sociedad Española de Investigación en Nutrición y Alimentación en Pediatría. Sociedad Española de Investigación en Nutrición y Alimentación en Pediatría (SEINAP). 2023. Spain. Participatory - oral communication. Conference.

- 16** Bustos-Aibar, M.; Berbel-Cascales, M.; Martín-Salas, A.; Abdelaziz, M.; Muñoz-Pajares, J.. A whole chloroplast genome method based on DNA barcoding to monitor diversity. 20th Annual Meeting of the Spanish Group for Floral Ecology (EcoFlor). Universidad de Sevilla. 2023. Spain.
- 17** Bustos-Aibar, M.; García-Muñoz, A.; Ferrón, C.; Olmedo-Castellanos, C.; Vaca-Benito, C.; Bakkali, M.; Muñoz-Pajares, J.; Abdelaziz, M.. Altimontane species complexes as model systems for studying phenotypic plasticity, phenotypic integration and evolvability. III Annual Symposium of Spanish Botany. Botanical Institute of Barcelona. 2022. Spain.
- 18** Bustos-Aibar, M.; Anguita-Ruiz, A.; Torres-Martos, A.; et al; Aguilera, C.M.. Gene Expression Profiles of Visceral and Subcutaneous Adipose Tissues in Children with Overweight or Obesity: The KIDADIPOSEQ Project. IWBBIO 2022: International Work-Conference on Bioinformatics and Biomedical Engineering. University of Granada. 2022. Spain.
- 19** Torres-Martos, A.; Anguita-Ruiz, A.; Bustos-Aibar, M.; Cámaras-Sánchez, S.; Alcalá, R.; Aguilera, C.M.; Alcalá-Fdez, J.. Human Multi-omics Data Pre-processing for Predictive Purposes Using Machine Learning: A Case Study in Childhood Obesity. Bioinformatics and Biomedical Engineering. IWBBIO 2022: International Work-Conference on Bioinformatics and Biomedical Engineering. University of Granada. 2022. Spain.
- 20** Bustos-Aibar, M.; Anguita-Ruiz, A.; Torres-Martos, A.; et al; Aguilera, C.M.. Gene expression profiles of visceral and subcutaneous adipose tissues in children with overweight or obesity: the KIDADIPOSEQ project. II CONGRESO INVESTIGACIÓN PTS. University of Granada. 2022. Spain.
- 21** Torres-Martos, A.; Anguita-Ruiz, A.; Bustos-Aibar, M.; Alcalá, R.; Aguilera, C.M.; Alcalá-Fdez, J.. Use of Machine learning methods to improve the early- life predictive programs of obesity childhood. II CONGRESO INVESTIGACIÓN PTS. University of Granada. 2022. Granada.
- 22** Bustos-Aibar, M.; Aguilera, C.M.; Plaza-Florido, A.; Ruiz-Ojeda; Gil-Campos, M.; Gil, A.; Plaza-Díaz, J.; Anguita-Ruiz, A.. Inter-tissue gene co-expression clusters from visceral adipose and skeletal muscle tissue are associated with cardiometabolic traits in children with obesity. ECO ONLINE 28th European Congress On Obesity. European Association for the Study of Obesity. 2021.

C.3. Research projects and contracts

- 1 Project.** PI23/00028, Towards Precision Medicine: Exosome and Omics analysis using eXplainable Artificial Intelligence to study their impact on lifespan Obesity, Insulin Resistance and Metabolic health (EXOMAIR). Aguilera, C.M.(Fondo de Investigaciones Sanitarias. Instituto de Salud Carlos III. Ministerio de Sanidad). 01/01/2024-31/12/2026. 191.250 €.
- 2 Project.** PI23/01032, Towards Precision Medicine: Exosome and Omics analysis using eXplainable Artificial Intelligence to study their impact on lifespan Obesity, Insulin Resistance and Metabolic health (EXOMAIR). Anguita-Ruiz, A.(Fondo de Investigaciones Sanitarias. Instituto de Salud Carlos III. Ministerio de Sanidad). 01/01/2024-31/12/2026. 139.375 €.
- 3 Project.** PPJIB-2024-68, P20. Pre-competitive Research Projects Program for Young Researchers 2025. Bustos-Aibar, M. (PI). (University of Granada). 01/01/2025-31/12/2025. 1.250 €.
- 4 Project.** PI22/01337, Disentangling the Interplay between behaviours and biomarkers across the lifespan (DIVERSE). Moreno, L.A.(Fondo de Investigaciones Sanitarias. Instituto de Salud Carlos III. Ministerio de Sanidad). 01/01/2023-31/12/2025. 39.930 €.
- 5 Project.** PI20/00563, Omics and artificial intelligence as tools to understand molecular mechanisms of insulin resistance in obese children during puberty (IBEROMICS). Aguilera, C.M.(Fondo de Investigaciones Sanitarias. Instituto de Salud Carlos III. Ministerio de Sanidad). 01/01/2021-31/12/2023. 173.030 €.
- 6 Project.** IDI-20190982, Investigación y desarrollo de nuevos productos alimentarios para la elaboración de una cesta saludable para alimentación infantil (MEDKIDS). Moreno, L.A.(Centro para el Desarrollo Tecnológico e Industrial (CDTI). Programa estratégico CIEN). 01/01/2020-31/12/2023. 135.000 €.

- 7 Project.** IM2020-kid, Unraveling the pathophysiology of adipose tissue in obese children through next generation RNA sequencing (KIDSADIPOSEQ). Aguilera, C.M.(CIBER Fisiopatología de la Obesidad y Nutrición (CIBEROBN). Instituto de Salud Carlos III. Ministerio de Sanidad). 08/05/2020-31/12/2021. 65.000 €.
- 8 Project.** PI16/00871, Pubertad y riesgo metabólico en niños obesos: alteraciones epigenéticas e implicaciones fisiopatológicas y diagnósticas. Estudio PUBMEP. (Fondo de Investigaciones Sanitarias. Instituto de Salud Carlos III. Ministerio de Sanidad). 01/01/2017-31/12/2020. 131.890 €.