

CURRICULUM VITAE

Elías Herrero Galán, PhD

Assistant Researcher at Centro Nacional de Investigaciones Cardiovasculares (CNIC). Molecular Mechanics Of The Cardiovascular System Laboratory.
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PRESENT RESEARCH AREA

Mechanobiochemistry, Molecular Mechanics, Cardiovascular Research, Single-molecule, Atomic Force Microscopy, Magnetic Tweezers, structure-function relationships in proteins.

ACADEMIC BACKGROUND

<i>Bachelor</i>	<i>Centre</i>	<i>Date</i>
Biochemistry	Facultad de Ciencias Químicas, Universidad Complutense de Madrid	June 2003

<i>Ph.D.</i>	<i>Centre</i>	<i>Thesis Supervisor</i>	<i>Date</i>
Biochemistry and Molecular Biology	Facultad de Ciencias Químicas, Universidad Complutense de Madrid	Dra. Mercedes Oñaderra Sánchez	03-07-2008

PAST SCIENTIFIC EXPERIENCE

<i>Position</i>	<i>R&D Centre</i>	<i>Institution</i>	<i>Start date</i>	<i>End date</i>
Research Assistant	Centro Nacional de Investigaciones Cardiovasculares	Instituto de Salud Carlos III	01-07-2019	-
Postdoctoral Researcher	Centro Nacional de Investigaciones Cardiovasculares	Instituto de Salud Carlos III	01-07-2014	30-06-19
Postdoctoral Researcher	Centro Nacional de Biotecnología	Consejo Superior de Investigaciones Científicas	01-01-11	30-06-14
Postdoctoral Researcher	IMDEA-Nanociencia	Instituto Madrileño de Estudios Avanzados (IMDEA)	01-02-09	31-12-10
Postdoctoral Researcher	Departamento de Bioquímica y Biología Molecular I	Universidad Complutense de Madrid	09-07-08	31-01-09
Predocctoral Researcher	Departamento de Bioquímica y Biología Molecular I	Universidad Complutense de Madrid	01-02-04	09-07-08
Visiting Scientist	Rosenstiel Basic Medical Science Research Center	Brandeis University, Boston, MA, EEUU	19-06-06	14-10-06
Honor Collaborator	Departamento de Bioquímica y Biología Molecular I	Universidad Complutense de Madrid	01-09-03	31-01-04

PARTICIPATION IN RESEARCH PROJECTS

PROJECT TITLE: "ProtMechanics-Live" ERC-Consolidator Grant
FINANCIAL ENTITY: European Research Council (101002927)
LENGTH FROM: 2021 *TO:* 2026
PRINCIPAL INVESTIGATOR: Jorge Alegre-Cebollada

PROJECT TITLE: "Definiendo la comunicación cruzada entre la fisiopatología del corazón y la mecánica de proteínas"
FINANCIAL ENTITY: Ministerio de Ciencia e Innovación (PID2020-120426GB-I00)
LENGTH FROM: 2021 *TO:* 2024
PRINCIPAL INVESTIGATOR: Jorge Alegre-Cebollada

PROJECT TITLE: "New Technologies Applied To The Study Of Biological Nanomachines"
FINANCIAL ENTITY: Comunidad de Madrid (P2018/NMT-4443)
LENGTH FROM: 2019 *TO:* 2022
PRINCIPAL INVESTIGATOR: Coordinated proposal (6 PI). PI CNIC node: Jorge Alegre-Cebollada

PROJECT TITLE: "Titin Allelic Discrimination to Uncover Pathophysiology Mechanisms in DCM".
FINANCIAL ENTITY: Myokardia Myo-Seeds Research Program
LENGTH FROM: 2020 *TO:* 2021
PRINCIPAL INVESTIGATOR: Jorge Alegre-Cebollada

PROJECT TITLE: "Network of excellence in Mechanobiology"
FINANCIAL ENTITY: Ministerio de Economía y Competitividad (BFU2017-90692-REDT).
LENGTH FROM: 2019 *TO:* 2020
PRINCIPAL INVESTIGATOR: Propuesta coordinada (10 IP). PI CNIC node: Jorge Alegre-Cebollada.

PROJECT TITLE: "Emergent mechanical properties of proteins in the myocardium and in biomaterials with biotechnological applications".
FINANCIAL ENTITY: MINECO BIO2017-83640-P.
LENGTH FROM: 2017 *TO:* 2020
PRINCIPAL INVESTIGATOR: Jorge Alegre-Cebollada

PROJECT TITLE: "Metabolic therapy for the treatment of dyastolic cardiac insufficiency - MINOTAUR"
FINANCIAL ENTITY: Acciones complementarias de programación conjunta internacional (APCIN-ISCI-2016)/ERA-CVD Joint Transnational Call 2016 "Transnational Research Projects on Cardiovascular Diseases". Instituto de Salud Carlos III.
LENGTH FROM: 2017 *TO:* 2019 (extendido a 2020)
PRINCIPAL INVESTIGATOR: Propuesta coordinada (5 IP). PI CNIC node: Jorge Alegre-Cebollada

PROJECT TITLE: "Mechanobiochemistry: from the regulation of the elasticity of muscle tissue to the production of biomaterials of adjustable rigidity".
FINANCIAL ENTITY: MINECO BIO2014-54768-P.
LENGTH FROM: 2014 *TO:* 2017
PRINCIPAL INVESTIGATOR: Jorge Alegre-Cebollada

PROJECT TITLE: "Integral study of the structure of influenza A virus by means of cryoelectron microscopy".

FINANCIAL ENTITY: MICINN BFU2011-25090/BMC.

LENGTH FROM: 2012 *TO:* 2014

PRINCIPAL INVESTIGATOR: Jaime Martín-Benito Romero

PROJECT TITLE: "Molecular chaperones: an assembly line involved in protein folding and degradation".

FINANCIAL ENTITY: MICINN BFU2010-15703/BMC.

LENGTH FROM: 2011 *TO:* 2013

PRINCIPAL INVESTIGATOR: José María Valpuesta Moralejo

PROJECT TITLE: "NANOBIOMAGNET: basics and applications of magnetic molecules, nanoparticles and nanostructures: from spintronics to biomedicine".

FINANCIAL ENTITY: Consejería de Educación de la Comunidad de Madrid, Fondo Social Europeo S2009MAT-1726

LENGTH FROM: 2010 *TO:* 2014

PRINCIPAL INVESTIGATOR: Rodolfo Miranda Soriano

PROJECT TITLE: "CONSOLIDER-Ingenio 2010: Molecular Nanoscience".

FINANCIAL ENTITY: CSD 2007-00010

LENGTH FROM: 2008 *TO:* 2012

PRINCIPAL INVESTIGATOR: Dr. José L. Carrascosa

PROJECT TITLE: "Analysis of the assembly and maturation processes of viral particles".

FINANCIAL ENTITY: BFU 2008-02328/BMC

LENGTH FROM: 2009 *TO:* 2011

PRINCIPAL INVESTIGATOR: Dr. José L. Carrascosa

PROJECT TITLE: "Study of structure-function relationships in ribotoxins and actinoporins".

FINANCIAL ENTITY: Ministerio de Educación y Ciencia (BFU 2006-04404).

LENGTH FROM: 2007 *TO:* 2009

PRINCIPAL INVESTIGATOR: Dr. José G. Gavilanes Franco

PROJECT TITLE: "Structure-function of proteins (ESFUNPROT)".

FINANCIAL ENTITY: Dirección General de Universidades e Investigación, Consejería de Educación. Comunidad de Madrid. Proyecto nº UCM2006

LENGTH FROM: 2006 *TO:* 2007

PRINCIPAL INVESTIGATOR: Dr. José G. Gavilanes Franco

PROJECT TITLE: "Structure-function of proteins (ESFUNPROT)".

FINANCIAL ENTITY: Dirección General de Universidades e Investigación, Consejería de Educación. Comunidad de Madrid. Proyecto nº UCM2005-910023.

LENGTH FROM: 2005 *TO:* 2006

PRINCIPAL INVESTIGATOR: Dr. José G. Gavilanes Franco

PROJECT TITLE: "Protein engineering applied to the toxins α -sarcin and sticholysin II".

FINANCIAL ENTITY: Ministerio de Ciencia y Tecnología (BMC 2003-03227).

LENGTH FROM: 2004

TO: 2006

PRINCIPAL INVESTIGATOR: Dr. José G. Gavilanes Franco

PROJECT TITLE: "Toxins perturbing cell membranes: study of structure-function relationships in α -sarcin and sticholysin II".

FINANCIAL ENTITY: Secretaría de Estado de Universidades, Investigación y Desarrollo. Dirección General de Enseñanza Superior DGES (2000). Proyecto BMC 2000-0551.

LENGTH FROM: 2000

TO:

PRINCIPAL INVESTIGATOR: Dr. José G. Gavilanes Franco

PUBLICATIONS

AUTHORS (in order of authorship): Martínez-Martín, I., Crousilles, A., Ochoa, J.P., Velázquez-Carreras, D., Mortensen, S.A., Herrero-Galán, E., Domínguez, F., García-Pavía, P., De Sancho, D., Wilmanns, M., Alegre-Cebollada, J.

TITLE: "Titin domains with reduced core hydrophobicity cause dilated cardiomyopathy".

JOURNAL/BOOK TITLE: *Cell Reports* doi: 10.1016/j.celrep.2023.113490

DATE OF PUBLICATION: 2023

AUTHORS (in order of authorship): Domínguez, F., Lalaguna, L., Martínez-Martín, I., Piqueras-Flores, J., Rasmussen, T., Zorio, E., Giovinazzo, G., Prados, B., Ochoa, J., Bornstein, B., González-López, E., Velázquez-Carreras, D., Pricolo, M.R., Gutiérrez-Agüera, F., Bernal, J., Herrero-Galán, E., Alegre-Cebollada, J., Lara-Pezzi, E., Pablo García-Pavía, P.

TITLE: "TTN missense variants as a cause of familial DCM".

JOURNAL/BOOK TITLE: *Circulation* 147:1711–1713. 10.1161/CIRCULATIONAHA.122.062833

DATE OF PUBLICATION: 2023

AUTHORS (in order of authorship): Herrero-Galán, E., Martínez-Martín, I., Sánchez-González, C., Vicente, N., Bonzón-Kulichenko, E., Calvo, E., Suay-Corredera, C., Pricolo, M.R., Fernández-Trasancos, A., Velázquez-Carreras, D., Badía Careaga, C., Abdellatif, M., Sedej, S., Rainer, P.P., Giganti, D., Pérez-Jiménez, R., Vázquez, J., Alegre-Cebollada, J.

TITLE: "Basal oxidation of conserved cysteines modulates cardiac titin stiffness and dynamics".

JOURNAL/BOOK TITLE: *Redox Biology* 52:102306. 10.1016/j.redox.2022.102306

DATE OF PUBLICATION: 2022

As co-first and co-corresponding author

Paper of the month june 2022 in SBE magazine

AUTHORS (in order of authorship): Huerta-López, C., Velázquez-Carreras, D., Espinosa, F.M., Sanchez, J.G., Martínez-del-Pozo, A., García-García, M., Rodríguez-Blanco, A., Esteban-González, R., Martín-Zamora, F.M., Gutierrez-Rus, L.I., García, R., del Pozo, M.A., Herrero-Galán, E., Plaza, G.R., Alegre-Cebollada, J.

TITLE: "Nuclear Translocation of Vitellogenin in the Honey Bee (*Apis mellifera*)".

JOURNAL/BOOK TITLE: *Apidologie* 53:13. doi: 10.1007/s13592-022-00914-9

DATE OF PUBLICATION: 2022

AUTHORS (in order of authorship): Salmela, H., Harwood, G., Münch, D., Elsik, C., Herrero-Galán, E., Vartiainen, M.K., Amdam, G.V.

TITLE: "Nuclear Translocation of Vitellogenin in the Honey Bee (*Apis mellifera*)".

JOURNAL/BOOK TITLE: *Apidologie* 53:13. doi: 10.1007/s13592-022-00914-9

DATE OF PUBLICATION: 2022

AUTHORS (in order of authorship): Leipart, V., Montserrat-Canals, M., Cunha, E.S., Luecke, H., Herrero-Galán, E., Halskau, O., Amdam, G.V.

TITLE: “Structure prediction of honey bee vitellogenin, a multi-domain protein important for insect immunity”.

JOURNAL/BOOK TITLE: *FEBS Open Bio* 12(1):51-70. doi: 10.1002/2211-5463.13316.

DATE OF PUBLICATION: 2021

January 2022 issue cover

AUTHORS (in order of authorship): Suay-Corredera, C., Pricolo, M.R., Herrero-Galán, E., Velázquez-Carreras, D., Sánchez-Ortiz, D., García-Giustiniani, D., Delgado, J., Galano-Frutos J.J., García-Cebollada, H., Vilches, S., Domínguez, F., Sabater Molina, M., Barriales-Villa, R., Frisso, G., Sancho, J., Serrano, L., García-Pavía, P., Monserrat, L., Alegre-Cebollada, J.

TITLE: “Protein haploinsufficiency drivers identify MYBPC3 variants that cause hypertrophic cardiomyopathy”.

JOURNAL/BOOK TITLE: *Journal of Biological Chemistry* 297(1): 100854. doi: 10.1016/j.jbc.2021.100854.

DATE OF PUBLICATION: 2021

AUTHORS (in order of authorship): Suay-Corredera, C., Pricolo, M.R., Velázquez-Carreras, D., Pathak, D., Nandwani, N., Pimenta-Lopes, C., Sánchez-Ortiz, D., Urrutia-Irazabal, I., Vilches, S., Dominguez, F., Frisso, G., Monserrat, L., García-Pavía, P., De Sancho, D., Spudich, J.A., Ruppel, K.M., Herrero-Galán, E., Alegre-Cebollada, J.

TITLE: “Nanomechanical phenotypes in cardiac myosin-binding protein C mutants that cause hypertrophic cardiomyopathy”.

JOURNAL/BOOK TITLE: *ACS Nano* 15(6): 10203-10216. doi: 10.1021/acsnano.1c02242.

DATE OF PUBLICATION: 2021

AUTHORS (in order of authorship): Abdellatif, M., Trummer-Herbst, V., Koser, F., Durand, S., Adão, R., Vasques-Nóvoa, F., Freundt, J.K., Voglhuber, J., Pricolo, M.R., Kasa, M., Türk, C., Aprahamian, F., Herrero-Galán, E., Hofer, S.J., Pendl, T., Rech, L., Kargl, J., Anto-Michel, N., Ljubojevic-Holzer, S., Schipke, J., Brandenberger, C., Auer, M., Schreiber, R., Koyani, C.N., Heinemann, A., Zirlik, A., Schmidt, A., von Lewinski, D., Scherr, D., Rainer, P.P., von Maltzahn, J., Mühlfeld, C., Krüger, M., Frank, S., Madeo, F., Eisenberg, T., Prokesch, A., Leite-Moreira, A.F., Lourenço, A.P., Alegre-Cebollada, J., Kiechl, S., Linke, W.A., Kroemer, G., Sedej, S.

TITLE: “Nicotinamide for the treatment of heart failure with preserved ejection fraction”.

JOURNAL/BOOK TITLE: *Science Translational Medicine* 13(580):eabd7064. doi: 10.1126/scitranslmed.abd7064.

DATE OF PUBLICATION: 2021

AUTHORS (in order of authorship): Herrero-Galán, E., Domínguez, F., Martínez-Martín, I., Sánchez-González, C., Vicente, N., Lalaguna, L., Bonzón-Kulichenko, E., Calvo, E., González-López, E., Cobo-Marcos, M., Bornstein, B., Briceño, A., Ochoa, J.P., Garcia-Aznar, J.M., Suay-Corredera, C., Pricolo, M.R., Fernández-Trasancos, A., Velázquez-Carreras, D., Badía Careaga, C., Prados, B., Gutiérrez-Agüera, F., Abdellatif, M., Sedej, S., Rainer, P.P., Giganti, D., Giovinazzo, G., Bernal, J.A., Pérez-Jiménez, R., Rasmussen, T.B., Morris Hey, T., Vivo-Ortega, I., Piqueras-Flores, J., Lara-Pezzi, E., Vázquez, J., Garcia-Pavía, P., Alegre-Cebollada, J.

TITLE: “Conserved cysteines in titin sustain the mechanical function of cardiomyocytes”.

JOURNAL/BOOK TITLE: *bioRxiv* doi: 10.1101/2020.09.05.282913

DATE OF PUBLICATION: 2020

AUTHORS (in order of authorship): Nicolas-Avila, J.A., Lechuga-Vieco, A.V., Esteban-Martinez, L., Sanchez-Diaz, M., Diaz-Garcia, E., Julian Santiago, D., Rubio-Ponce, A., Liang Yao Li, J., Balachander, A., Quintana, J.A., Martinez-de-Mena, R.; Castejon-Vega, B., Pun-Garcia, A., Traves, P.G., Bonzon-Kulichenko, E., Garcia-Marques, F., Cusso, L., A-Gonzalez, N., Gonzalez-Guerra, A., Roche-Molina, M., Martin-Salamanca, S., Crainiciuc, G., Guzman, G., Larrazabal, J., Herrero-Galan, E., Alegre-Cebollada, J., Lemke, G., Rothlin, C.V., Jimenez-Borreguero, L.J., Reyes, G., Castrillo, A., Desco, M., Muñoz-Canoves, P., Ibañez, B., Torres, M., Ng, L.G., Priori, S.G., Bueno, H., Vazquez, J.M., Cordero, M.D., Bernal, J.A., Enriquez, J.A., Hidalgo, A.

TITLE: "A network of macrophages supports mitochondrial homeostasis in the heart".

JOURNAL/BOOK TITLE: *Cell*, 183(1):94-109.e23. doi: 10.1016/j.cell.2020.08.031.

DATE OF PUBLICATION: 2020

Best Biomedical Publication of the year, "Constantes y Vitales" Prize

AUTHORS (in order of authorship): Rivas-Pardo, J.A., Li, Y., Mártonfalvi, Z., Tapia-Rojo, R., Unger, A., Fernández-Trasancos, A., Herrero-Galán, E., Velázquez-Carreras, D., Linke, W.A., Fernández, J.M., Alegre-Cebollada, J.

TITLE: "A HaloTag-TEV genetic cassette for mechanical phenotyping of proteins from tissues".

JOURNAL/BOOK TITLE: *Nature Communications* 11:2060 doi: 10.1038/s41467-020-15465-9

DATE OF PUBLICATION: 2020

AUTHORS (in order of authorship): Pricolo, M.R., Herrero-Galán, E., Mazzaccara, C., Losi, M.A., Alegre-Cebollada, J., Frisso, G.

TITLE: "Protein thermodynamic destabilization in the assessment of pathogenicity of a variant of uncertain significance in cardiac myosin binding protein C".

JOURNAL/BOOK TITLE: *Journal of Cardiovascular Translational Research* 3(5):867-877. doi: 10.1007/s12265-020-09959-6.

DATE OF PUBLICATION: 2020

AUTHORS (in order of authorship): Herrero-Galán, E., Martinez-Martín, I., Alegre-Cebollada, J.

TITLE: "Redox regulation of protein nanomechanics in health and disease: Lessons from titin".

JOURNAL/BOOK TITLE: *Redox Biology* 21 (2019): 101074

DATE OF PUBLICATION ():* 2019

AUTHORS (in order of authorship): Manteca, A., Schönfelder, J., Alonso-Caballero, A., Fertin, M.J., Barrietabeña, N., Faria, B.F., Herrero-Galán, E., Alegre-Cebollada, J., De Sancho, D., Pérez-Jiménez, R.

TITLE: "Mechanochemical evolution of the giant muscle protein titin as inferred from resurrected proteins".

JOURNAL/BOOK TITLE: *Nature Structural And Molecular Biology*, 24(8): 652-657

DATE OF PUBLICATION: 2017

AUTHORS (in order of authorship): Ares, P., Fuentes-Pérez, E., Herrero-Galán, E., Valpuesta, J.M., Gil, A., Gómez-Herrero, J., Moreno-Herrero, F.

TITLE: "High resolution Atomic Force Microscopy of double-stranded RNA".

JOURNAL/BOOK TITLE: *Nanoscale* 8, 11818-11826

DATE OF PUBLICATION: 2016

AUTHORS (in order of authorship): Tomé-Amat, J., Herrero-Galán, E., Oñaderra, M., Martínez-del-Pozo, A., Gavilanes, J.G., Lacadena, J.

TITLE: "Preparation of an engineered safer immunotoxin against colon carcinoma based on the ribotoxin hirsutellin A".

JOURNAL/BOOK TITLE: *FEBS Journal* **282**: 2131-2141

DATE OF PUBLICATION: 2015

AUTHORS (in order of authorship): Herrero-Galán, E., García-Ortega, L., Olombrada, M., Lacadena, J., Martínez-del-Pozo, A., Gavilanes, J.G., Oñaderra, M.

TITLE: "Hirsutellin A: a paradigmatic example of the insecticidal function of fungal ribotoxins".

JOURNAL/BOOK TITLE: *Insects* **4**: 339 - 356

DATE OF PUBLICATION: 2013

AUTHORS (in order of authorship): Garavís, M., Bocanegra, R., Herrero-Galán, E., González, C., Villasante, A., Arias-González, J.R.

TITLE: "Mechanical unfolding of long human telomeric RNA (TERRA)".

JOURNAL/BOOK TITLE: *Chemical Communications* **49** (57): 6397 – 6399

DATE OF PUBLICATION: 2013

AUTHORS (in order of authorship): Herrero-Galán, E., Fuentes-Pérez, M.E., Carrasco, C., Valpuesta, J.M., Carrascosa, J.L., Moreno-Herrero, F., Arias-González, J.R.

TITLE: "Mechanical identities of RNA and DNA double helices unveiled at the single-molecule level".

JOURNAL/BOOK TITLE: *Journal Of The American Chemical Society* **135**: 122-131

DATE OF PUBLICATION: 2013

AUTHORS (in order of authorship): Olombrada, M., Herrero-Galán, E., Tello, D., Oñaderra, M., Gavilanes, J.G., Martínez-del-Pozo, A., García-Ortega, L.

TITLE: "Fungal extracellular ribotoxins as natural insecticidal agents".

JOURNAL/BOOK TITLE: *Insect Biochemistry And Molecular Biology* **43**: 39-46

DATE OF PUBLICATION: 2013

AUTHORS (in order of authorship): Herrero-Galán, E., García-Ortega, L., Lacadena, J., Martínez del Pozo, A., Olmo, N., Gavilanes, J.G., Oñaderra, M.

TITLE: "A non-cytotoxic but ribonucleolytically specific ribotoxin variant: implication of tryptophan residues in the cytotoxicity of hirsutellin A".

JOURNAL/BOOK TITLE: *Biological Chemistry* **393**: 449-456

DATE OF PUBLICATION: 2012.

AUTHORS (in order of authorship): Herrero-Galán, E., García-Ortega, L., Lacadena, J., Martínez del Pozo, A., Olmo, N., Gavilanes, J.G., Oñaderra, M.

TITLE: "Implication of an Asp residue in the ribonucleolytic activity of hirsutellin A reveals new electrostatic interactions at the active site of ribotoxins".

JOURNAL/BOOK TITLE: *Biochimie* **94**: 427-433.

DATE OF PUBLICATION: 2012.

AUTHORS (in order of authorship): Álvarez-García, E., Diago-Navarro, E., Herrero-Galán, E., García-Ortega, L., López-Villarejo, J., Olmo, N., Díaz-Orejas, R., Gavilanes, J.G., Martínez-del-Pozo, Á.

TITLE: "The ribonucleolytic activity of the ribotoxin α -sarcin is not essential for *in vitro* protein biosynthesis inhibition".

JOURNAL/BOOK TITLE: *Biochimica et Biophysica Acta - Proteins and Proteomics* **1814** (10):1377-82.

DATE OF PUBLICATION: 2011.

AUTHORS (in order of authorship): Herrero-Galán, E., Álvarez-García, E., Carreras-Sangrà, N., Lacadena, J., Alegre-Cebollada, J., Martínez del Pozo, A., Oñaderra, M., Gavilanes, J.G.
TITLE: "Fungal ribotoxins: structure, function and evolution".
JOURNAL/BOOK TITLE: *Microbial toxins: current research and future trends*. T. Prof., ed. (Auckland, Nueva Zelanda), pp 167-187 *KEY:* CB
DATE OF PUBLICATION: 2009.

AUTHORS (in order of authorship): Viegas, A., Herrero-Galán, E., Oñaderra, M., Macedo, A.L., Bruix, M.
TITLE: "Solution structure of Hirsutellin A: new insights into the active center and interacting interfaces of ribotoxins".
JOURNAL/BOOK TITLE: *FEBS Journal* **276** (2009) 2381-2390. *KEY:* A
DATE OF PUBLICATION: 2009

AUTHORS (in order of authorship): Alegre-Cebollada, J., Cunietti, M., Herrero-Galán, E., Gavilanes, J.G., Martínez del Pozo, A.
TITLE: "Calorimetric scrutiny of lipid binding by Sticholysin II toxin mutants".
JOURNAL/BOOK TITLE: *Journal of Molecular Biology* **382** (2008) 920-930. *KEY:* A
DATE OF PUBLICATION: 2008

AUTHORS (in order of authorship): Carreras-Sangrà, N., Álvarez-García, E., Herrero-Galán, E., Tomé, J., Lacadena, J., Alegre-Cebollada, J., Oñaderra, M., Gavilanes, J.G., Martínez del Pozo, A.
TITLE: "The therapeutic potential of fungal ribotoxins".
JOURNAL/BOOK TITLE: *Current Pharmaceutical Biotechnology* **9** (2008) 153-160 *KEY:* R
DATE OF PUBLICATION: 2008

AUTHORS (in order of authorship): Herrero-Galán, E., Lacadena, J., Martínez del Pozo, A., Boucias, D.G., Olmo, N., Oñaderra, M., Gavilanes, J.G.
TITLE: "The insecticidal protein hirsutellin A from the mite fungal pathogen *Hirsutella thompsonii* is a ribotoxin".
JOURNAL/BOOK TITLE: *Proteins: Structure, Function and Bioinformatics* **72**, 217-228. *KEY:* A
DATE OF PUBLICATION: 2008

AUTHORS (in order of authorship): Lacadena, J., Álvarez-García, E., Carreras-Sangrà, N., Herrero-Galán, E., Alegre-Cebollada, J., García-Ortega, L., Oñaderra, M., Gavilanes, J.G., Martínez del Pozo, A.
TITLE: "Fungal ribotoxins: molecular dissection of a family of natural killers".
JOURNAL/BOOK TITLE: *FEMS Microbiology Reviews* **31** (2007) 212 – 237. *KEY:* R
DATE OF PUBLICATION: 2007

TECHNOLOGY TRANSFER ACTIVITIES

Set-up of the "**Protein Crystallization Lab**" in the Department of Biochemistry and Molecular Biology at Universidad Complutense, Madrid, Spain, thanks to the experience acquired by the candidate during a three-month stay at the protein crystallography lab directed by Drs. Greg Petsko and Dagmar Ringe at the Rosenstiel Basic Medical Sciences Research Center at Brandeis University in Boston, USA. The candidate took the responsibility of selecting the proper localization for a laboratory of the required characteristics, purchasing materials and reagents, and the transference of crystallization techniques,

mainly the “hanging drop” technique. Funding came from the group directed by Dr. José G. Gavilanes, Head of the Department, and time dedication by the candidate was of several months.

STAYS IN INTERNATIONALLY RECOGNIZED CENTRES

CENTRE: Petsko-Ringe lab, Rosenstiel Basic Medical Sciences Research Center, Brandeis University.
PLACE: Waltham, Boston. *COUNTRY:* USA *YEAR:* 2006 *TOPIC:* Protein cristalography

PARTICIPATION IN SPECIALIZED COURSES

- Participation in the **Single-Protein Mechanics Course**, held in Bilbao (Spain) from September 20th to 30th 2010. The course was organized by Prof. Julio Fernández (Columbia University, NY) and encompassed more than 70 hours of theory and experimental sessions, supervised by Prof. Fernandez himself and several other scientists of recognized prestige in the single-molecule field, like Sergi García-Manyès, Lorna Dougan, Mariano Carrión Vázquez, Hui Lu, Wolfgang Linke y Hongbin Li. Participation was restricted to 15 students, selected by their CV.
- Participation in the course “**One hundred years of dialogue: biomedical sciences in the history of the 20th Century**”, organized by Profs. María Jesús Santesmases and Miguel García Sancho. January 17th – February 4th 2011. Universidad Autónoma de Madrid.
- Participation in the course on **Multiple Sequence Alignment** organized by Drs. Mónica Chagoyen and Juan Carlos Sánchez from April 13th to 15th 2011, at the Centro Nacional de Biotecnología in Madrid.
- Participation in the course on **Protein Structure Analysis and Prediction** organized by Drs. Mónica Chagoyen and Juan Carlos Sánchez from October 24th to 26th 2011, at the Centro Nacional de Biotecnología in Madrid.
- Participation in the course **Programming Python (CYTED/EMBnet/CNB)**, organized by Dr. José R. Valverde from April 1st to 5th 2013 at the Centro Nacional de Biotecnología in Madrid.
- Participation in the course **Biomolecules and Single-Molecule Techniques**, XX International Summer School Nicolás Cabrera, July 21st - 26th 2013, Madrid, Spain.
- Participation in the **Cardiology Minicourse** organized by the **M+Vision Madrid-Massachusetts Institute Of Technology** consortium, from October 15th to 16th 2014 at Hospital Clínico San Carlos, Madrid.

PRESENTATIONS IN CONGRESSES

AUTHORS: Herrero-Galán, E., Martínez-Martín, I., Sánchez-González, C., Vicente, N., Bonzón-Kulichenko, E., Calvo, E., Suay-Corredera, C., Pricolo, M.R., Fernández-Trasancos, Á., Velázquez-Carreras, D., Badía Careaga, C., Abdellatif, M., Sedej, S., Rainer, P.P., Giganti, D., Pérez-Jiménez, R., Vázquez, J., Alegre-Cebollada, J.

TITLE: “Basal oxidation of conserved cysteines modulates cardiac titin stiffness and dynamics”

CONGRESS: Functional Disulfides In Health & Disease

MEETING PLACE: Israel

YEAR: 2021

AUTHORS: Pricolo, M.R., Oria-Muriel, M.A., Vicente, N., Fernández-Trasancos, Á., Huerta-López, C., Velázquez-Carreras, D., Herrero-Galán, E., Alegre-Cebollada, J.
TITLE: "Engineering tools to probe titin mechanics in living cells and animals"
CONGRESS: 43rd Congress of the Spanish Society of Biochemistry and Molecular Biology
MEETING PLACE: Barcelona
YEAR: 2021

AUTHORS: Huerta-López, C., Velázquez-Carreras, D., Espinosa, F., Martínez-del-Pozo, Á., García-García, M., García, R., del Pozo, M.Á., Herrero-Galán, E., Plaza, G., Alegre-Cebollada, J.
TITLE: "Cell response to substrate energy dissipation supersedes rigidity sensing"
CONGRESS: 7th International Iberian Biophysics Congress
MEETING PLACE: Coimbra, Portugal
YEAR: 2021

AUTHORS: Martínez-Martín, I., Crousilles, A., Herrero-Galán, E., Velázquez-Carreras, Mortensen, S.A., García-Pavía, P., Alegre-Cebollada, J, Wilmanns, M.
TITLE: "Crystallographic structures of titin immunoglobulin-like I21 domains involved in dilated cardiomyopathy"
CONGRESS: 7th International Iberian Biophysics Congress
MEETING PLACE: Coimbra, Portugal
YEAR: 2021

AUTHORS: Herrero-Galán, E., Martínez-Martín, I., Vicente, N., Sánchez-González, C., Velázquez-Carreras, D., Bonzón-Kulichenko, E., Calvo, E., Vázquez, J., Alegre-Cebollada, J.
TITLE: "In vivo titin oxidation as a regulator of muscle elasticity"
CONGRESS: Joint 12th EBSA-10th ICBP-IUPAP Biophysics Congress
MEETING PLACE: Madrid
YEAR: 2019

AUTHORS: Herrero-Galán, E., Martínez-Martín, I., Vicente, N., Sánchez-González, C., Velázquez-Carreras, D., Bonzón-Kulichenko, E., Calvo, E., Vázquez, J., Alegre-Cebollada, J.
TITLE: "In vivo titin oxidation as a regulator of muscle elasticity"
CONGRESS: 42nd Congress of the Spanish Society of Biochemistry and Molecular Biology
MEETING PLACE: Madrid
YEAR: 2019

AUTHORS: Suay-Corredera, C., Herrero-Galán, E., Velázquez-Carreras, D., Pricolo, M.R., Urrutia-Irazábal, I., García-Giustiniani, D., Delgado, J., Frisso, G., Serrano, L., García-Pavía, P., Monserrat, L., Alegre-Cebollada, J.
TITLE: "Nanomechanical phenotypes in cardiac myosin-binding protein C mutants that cause hypertrophic cardiomyopathy".
CONGRESS: 47th European Muscle Conference
MEETING PLACE: Budapest
YEAR: 2018

AUTHORS: Herrero-Galán, E., Sánchez-González, C., Velázquez-Carreras, D., Bonzón-Kulichenko, E., Calvo, E., Vázquez, J., Alegre-Cebollada, J.

TITLE: "Native redox posttranslational modifications as regulators of titin mechanical properties".
CONGRESS: 7th Multifrequency AFM Conference.
MEETING PLACE: Madrid, Spain.
YEAR: 2018

AUTHORS: Herrero-Galán, E., Sánchez-González, C., Velázquez-Carreras, D., Bonzón-Kulichenko, E., Calvo, E., Vázquez, J., Alegre-Cebollada, J.
TITLE: "Native redox posttranslational modifications as regulators of titin mechanical properties".
CONGRESS: 62nd Annual Meeting of the Biophysical Society.
MEETING PLACE: San Francisco, CA, USA
YEAR: 2018

AUTHORS: Herrero-Galán, E., Sánchez-González, C., Velázquez-Carreras, D., Bonzón-Kulichenko, E., Calvo, E., Vázquez, J., Alegre-Cebollada, J.
TITLE: "Native redox posttranslational modifications as regulators of titin mechanical properties".
CONGRESS: 2017 CNIC Scientific Retreat
MEETING PLACE: Madrid, Spain
YEAR: 2017

AUTHORS: Herrero-Galán, E., Sánchez-González, C., Velázquez-Carreras, D., Bonzón-Kulichenko, E., Calvo, E., Vázquez, J., Alegre-Cebollada, J.
TITLE: "Native redox posttranslational modifications as regulators of titin mechanical properties".
CONGRESS: 46th European Muscle Conference
MEETING PLACE: Potsdam, Alemania.
YEAR: 2017

AUTHORS: Suay-Corredera, C., Herrero-Galán, E., Velázquez-Carreras, D., Urrutia-Irazábal, I., García-Giustiniani, D., Delgado, J., Serrano, L., García-Pavía, P., Monserrat, L., Alegre-Cebollada, J.
TITLE: "Nanomechanical phenotypes in hypertrophic cardiomyopathy caused by missense mutations in cardiac myosin-binding protein C".
CONGRESS: 61st Annual Meeting of the Biophysical Society
MEETING PLACE: New Orleans, Louisiana, USA.
YEAR: 2017

AUTHORS: Suay-Corredera, C., Herrero-Galán, E., Velázquez-Carreras, D., Urrutia-Irazábal, I., García-Giustiniani, D., Delgado, J., Serrano, L., García-Pavía, P., Monserrat, L., Alegre-Cebollada, J.
TITLE: "Nanomechanical phenotypes in familial hypertrophic cardiomyopathy".
CONGRESS: VI CNIC Conference, "Mechanical Forces In Physiology And Disease".
MEETING PLACE: CNIC, Madrid
YEAR: 2016

AUTHORS: Alegre-Cebollada, J., Sánchez-González, C., Velázquez-Carreras, D., Huerta-López, C., Suay-Corredera, C., Herrero-Galán, E.
TITLE: "Single-molecule Mechanobiochemistry Laboratory at CNIC".
CONGRESS: 39th Congress of the Spanish Society of Biochemistry and Molecular Biology
MEETING PLACE: Salamanca, Spain
YEAR: 2016

AUTHORS: Pérez-Jiménez, R., Manteca, A., De Sancho, D., Herrero-Galán, E., Alegre-Cebollada, J.
TITLE: "Mechanochemical evolution of the giant muscle protein titin as inferred from ancient proteins".
CONGRESS: 60th Annual Meeting of the Biophysical Society
MEETING PLACE: Los Angeles, California, USA.
YEAR: 2016

AUTHORS: Herrero-Galán, E., Suay-Corredera, C., Bonzón-Kulichenko, E., Vázquez, J. Alegre-Cebollada, J.
TITLE: "Regulation of titin mechanics by native redox posttranslational modifications".
CONGRESS: 10th EBSA European Biophysics Congress
MEETING PLACE: Dresden
YEAR: 2015

AUTHORS: Herrero-Galán, E., Suay-Corredera, C., Sánchez-González, C., Bonzón-Kulichenko, E., Vázquez, J. Alegre-Cebollada, J.
TITLE: "A Mass Spectrometry-based method to study the redox state of cysteines in titin".
CONGRESS: XV Congress of the Spanish Biophysical Society.
MEETING PLACE: Granada
YEAR: 2015 **(Selected for oral presentation during the symposium Cell And Tissue Biophysics)**

AUTHORS: Herrero-Galán, E., Suay-Corredera, C., Bonzón-Kulichenko, E., Vázquez, J. Alegre-Cebollada, J.
TITLE: "A proteomics-based method to study the redox state of cysteine residues in titin".
CONGRESS: Retiro Científico del Centro Nacional de Investigaciones Cardiovasculares 2014.
MEETING PLACE: Madrid
YEAR: 2014 **(Selected Best Poster of the Scientific Retreat 2014)**

AUTHORS: Suay-Corredera, C., Herrero-Galán, E., Bonzón-Kulichenko, E., Vázquez, J. Alegre-Cebollada, J.
TITLE: "Characterisation of the redox state of cryptic cysteines in titin".
CONGRESS: X Jornadas de Jóvenes Investigadores
MEETING PLACE: Albacete
YEAR: 2014 **(Selected Best Poster in the Student Category)**

AUTHORS: Herrero-Galán, E., Fuentes-Pérez, M.E., Carrasco, C., Valpuesta, J.M., Carrascosa, J.L., Moreno-Herrero, F., Arias-González, J.R.
TITLE: "Mechanical identities of RNA and DNA double helices unveiled at the single-molecule level".
CONGRESS: XX International Summer School Nicolás Cabrera, Biomolecules and Single-Molecule Techniques
MEETING PLACE: Madrid
PUBLICATION: Poster
YEAR: 2013

AUTHORS: Herrero-Galán, E., Fuentes-Pérez, M.E., Carrasco, C., Valpuesta, J.M., Carrascosa, J.L., Moreno-Herrero, F., Arias-González, J.R.
TITLE: "Single-molecule manipulation of RNA duplexes and G-quadruplexes".
CONGRESS: IX Meeting of Nucleic Acids and Nucleosides

MEETING PLACE: Oviedo
PUBLICATION: Book of abstracts
YEAR: 2013

AUTHORS: Sacristán, M.O., Herrero-Galán, E., Tello, D., Oñaderra, M., Gavilanes, J.G., Martínez del Pozo, Á., García-Ortega, L.
TITLE: "Fungal extracellular ribotoxins as natural insecticidal agents".
CONGRESS: 22nd IUBMB & 37th FEBS Congress
MEETING PLACE: Sevilla
PUBLICATION: Poster
YEAR: 2012

AUTHORS: Herrero-Galán, E., Fuentes-Pérez, M.E., Valpuesta, J.M., Carrascosa, J.L., Moreno-Herrero, F., Arias-González, J.R.
TITLE: "A single-molecule comparison of the mechanical properties of dsRNA and dsDNA".
CONGRESS: 2nd Workshop on Nanobioscience IMDEA-Nanociencia / CNB-CSIC
MEETING PLACE: Madrid
PUBLICATION: Oral presentation
YEAR: 2012

AUTHORS: Herrero-Galán, E., Fuentes-Pérez, M.E., Valpuesta, J.M., Carrascosa, J.L., Moreno-Herrero, F., Arias-González, J.R.
TITLE: "A single-molecule comparison of the mechanical properties of dsRNA and DNA".
CONGRESS: 1st Early Stage Researchers Workshop IMDEA-Nanoscience
MEETING PLACE: Madrid
PUBLICATION: Book of Abstracts
YEAR: 2011

AUTHORS: Herrero-Galán, E., Valpuesta, J.M., Carrascosa, J.L., Arias-González, J.R.
TITLE: "A single-molecule comparison of the mechanical properties of dsRNA and DNA".
CONGRESS: XI Spanish Biophysical Society Congress
MEETING PLACE: Murcia
PUBLICATION: Book of Abstracts
YEAR: 2011

AUTHORS: Herrero-Galán, E., Valpuesta, J.M., Carrascosa, J.L., Arias-González, J.R.
TITLE: "Single-molecule characterization of the mechanical properties of dsRNA by means of optical tweezers".
CONGRESS: IV Spanish-Portuguese Biophysical Congress
MEETING PLACE: Zaragoza
PUBLICATION: Book of Abstracts
YEAR: 2010

AUTHORS: Herrero-Galán, E., Lacadena, J., Martínez Del Pozo, A., Olmo, N., Oñaderra, M., Gavilanes, J.G.
TITLE: "Tryptophan mutations in hirsutellin A produce a non-cytotoxic but ribonucleolytically active ribotoxin".
CONGRESS: IV Spanish-Portuguese Biophysical Congress
MEETING PLACE: Zaragoza

PUBLICATION: Book of Abstracts
YEAR: 2010

AUTHORS: Viegas, A., Herrero-Galán, E., Oñaderra, M., Macedo, A., Bruix, M.
TITLE: "The solution structure of hirsutellin A; structure-function relationship of ribotoxins".
CONGRESS: V Reunión de la Red Temática Nacional de Estructura y Función de Proteínas
MEETING PLACE: Valencia
PUBLICATION: Book of Abstracts
YEAR: 2008

AUTHORS: Herrero-Galán, E., Lacadena, J., Martínez del Pozo, A., Oñaderra, M., Gavilanes, J.G.
TITLE: "Caracterización estructural y funcional de la Hirsutelina A, una nueva ribotoxina".
CONGRESS: XXX Congreso de la Sociedad Española de Bioquímica y Biología Molecular
MEETING PLACE: Málaga
PUBLICATION: Book of Abstracts
YEAR: 2007

AUTHORS: Alegre-Cebollada, J., Cunietti, M., García-Coscolín, T., Herrero-Galán, E., Oñaderra, M., Gavilanes, J.G., Martínez del Pozo, A.
TITLE: "Calorimetría de titulación isotérmica y espectroscopia de infrarrojo para el estudio de mutantes inactivos de la toxina formadora de poros Stichelina II".
CONGRESS: XXX Congreso de la Sociedad Española de Bioquímica y Biología Molecular
MEETING PLACE: Málaga
PUBLICATION: Book of Abstracts
YEAR: 2007

AUTHORS: Viegas, A., Herrero-Galán, E., Oñaderra, M., Macedo, A., Bruix, M.
TITLE: "The solution structure of hirsutellin A; structure-function relationships of ribotoxins"
CONGRESS: Euromar 2007, European NMR Conference
MEETING PLACE: Tarragona
PUBLICATION: Book of Abstracts
YEAR: 2007

AUTHORS: Alegre-Cebollada, J., Herrero-Galán, E., Martínez del Pozo, A., Gavilanes, J.G.
TITLE: "Actinoporin binding to lipids studied by isothermal titration calorimetry"
CONGRESS: 6th EBSA European Biophysics Congress
MEETING PLACE: London
PUBLICATION: Book of Abstracts
YEAR: 2007

AUTHORS: Herrero-Galán, E., Lacadena, J., Martínez del Pozo, A., Oñaderra, M., Gavilanes, J.G.
TITLE: "Structural and functional studies of hirsutellin A: a new ribotoxin".
CONGRESS: 6th EBSA European Biophysics Congress
MEETING PLACE: London
PUBLICATION: Book of Abstracts
YEAR: 2007 **(Selected Best Poster of the RNA Structure and Function session)**

AUTHORS: Herrero-Galán, E., Lacadena, J., Martínez del Pozo, A., Oñaderra, M., Gavilanes, J.G.
TITLE: "Hirsutellin: an advanced ribonuclease. Structural and functional studies".

CONGRESS: VI Congreso Ibero-Americano de Biofísica
MEETING PLACE: Madrid
PUBLICATION: Book of Abstracts
YEAR: 2006

AUTHORS: Herrero-Galán, E., Lacadena, J., Martínez del Pozo, A., Oñaderra, M., Gavilanes, J.G.
TITLE: "Protein-lipid interactions in ribotoxins".
CONGRESS: Workshop on Lipid-Protein interactions
MEETING PLACE: Murcia
PUBLICATION: Book of Abstracts
YEAR: 2006

AUTHORS: Herrero-Galán, E., Lacadena, J., Martínez del Pozo, A., Oñaderra, M., Gavilanes, J.G.
TITLE: "Estudio comparativo entre la Hirsutelina A de *Hirsutella thompsonii* y la ribotoxina α -sarcina".
CONGRESS: XXVIII Congreso de la Sociedad Española de Bioquímica y Biología Molecular
MEETING PLACE: Zaragoza
PUBLICATION: Book of Abstracts
YEAR: 2005

AUTHORS: Herrero-Galán, E., Lacadena, J., Martínez del Pozo, A., Oñaderra, M., Gavilanes, J.G.
TITLE: "Hirsutellin A: a protein between non toxic ribonucleases and ribotoxins".
CONGRESS: Third Portuguese-Spanish Biophysics Congress
MEETING PLACE: Lisbon
PUBLICATION: Book of Abstracts
YEAR: 2004

OTHER ACHIEVEMENTS

DIRECTION OF PhD THESES

- **Carla Huerta López:** "*Production of biomaterials of adjustable rigidity based on the regulation of muscle tissue elasticity*". Universidad Complutense de Madrid. September 2021. Sobresaliente Cum Laude.
- **Carmen Suay Corredera:** "*Nanomechanical phenotypes in MYBPC3 causing hypertrophic cardiomyopathy*". Universidad Complutense de Madrid.
- **Inés Martínez-Martín:** "*Influencia del estado rédox de las cisteínas de titina en la adaptación perinatal del miocardio*". Universidad Autónoma de Madrid.

SUPERVISION OF ACADEMIC RESEARCH PROJECTS

- **Valentina Chiusolo:** "*Hirsutellina A: omologie e differenze con le ribonucleasi*". Università Degli Studi Del Sannio, Facoltà di Scienze MM. FF. NN., Matr. 155/000256, 2006 / 2007.
- **Jorge Pablo Arribas Miguélez:** "*Tandem cloning of the protein α -synuclein*". Universidad Autónoma de Madrid, 2011 / 2012.
- **Kelly Crocker:** "*Production of VHL mutants for the study of their interaction with the CCT chaperone*". Universidad Autónoma de Madrid, 2012 / 2013.
- **Irene Gutiérrez Pérez:** "*Study of the influence of sequence in the mechanical properties of dsDNA and dsRNA*". Universidad Autónoma de Madrid, 2012 / 2013.

- **María Teresa Bueno Carrasco:** “Structural study of the complex formed by the VHL protein and the chaperones Hsp70 and CCT”. Universidad Autónoma de Madrid, 2013 / 2014.
- **Cristina Sánchez González:** “Study of the elasticity of cardiac proteins by single molecule techniques: optimization of a protocol for in-gel determination of the redox state of cysteines”. Universidad de Alcalá de Henares, 2014 / 2015.
- **Carmen Suay Corredera:** “Mechanical phenotypes as contributors to the development of hypertrophic cardiomyopathy”. Universidad Complutense de Madrid, 2015 / 2016.
- **Cristina Sánchez González:** “New methods for the detection of oxidized cysteines in the protein titin”. Universidad Complutense de Madrid, 2015 / 2016.
- **Inés Martínez Martín:** “Oxidative posttranslational modifications as regulators of titin mechanical properties”. Universidad Autónoma de Madrid, 2017 / 2018.
- **Inés Martínez-Martín:** “Cysteine oxidation as a regulator of titin elasticity”. Universidad Autónoma de Madrid, 2019/2020.

PARTICIPATION IN PhD EVALUATION COMMITTEES

- **Esperanza Rivera de Torre:** “Structural and functional characterization of venom pore-forming proteins”. Universidad Complutense de Madrid, 2020.
- **Javier Ruiz de la Herrán Pidal:** “Diseño de variantes optimizadas de inmunotoxinas basadas en ribonucleasas fúngicas: efecto antitumoral *in vitro* e *in vivo*”. Universidad Complutense de Madrid, 2021
- **Javier Narbona Corral:** “Nuevos diseños nanobiotecnológicos frente a cáncer basados en inmunotoxinas”. Universidad Complutense de Madrid, 2021.
- **Francisco José Martínez Carmona:** “Caracterización estructural y funcional de la anexina A2 humana. Disección molecular de los mecanismos de agregación de membranas”. Universidad Complutense de Madrid, 2023.

TEACHING

- Participation in the Course on **Biochemical Analysis Techniques 2** of the Degree on **Biochemistry**, Facultad de Ciencias Químicas, Universidad Complutense de Madrid (since 2022). 4h/year.
- Participation in the **Master Frontiers in the Study of Biomolecules**, Facultad de Ciencias de la Universidad Autónoma de Madrid (since 2021). 1'5h/year.
- Participation in the Courses on **Protein Structure** of the **PhD and Master Degree Programs on Biochemistry, Molecular Biology and Biomedicine** and **Chemical Science and Technology** at Universidad Complutense de Madrid (from **2006/2007 to present**).
- Participation in the Course on **Biophysics** of the **PhD Program on Biophysics**, UAM (2011/2012, 2012/2013).
- **Teaching Assistant** in the laboratory practices of **Instrumental Techniques in Biology** (UCM), during **2003/2004, 2005/2006, 2007/2008** and **2008/2009**.
- **Teaching Assistant** in the laboratory practices of **Biochemistry** (UCM) during **2004/2005** and **2006/2007**.
- Participation in the subject **Instrumental Techniques in Biology** (Universidad Complutense de Madrid, Biology) during **2003/2004, 2004/2005, 2005/2006, 2006/2007, 2007/2008** and **2008/2009**.
- Participation in the subject **Specialized Experimental Biology** (Universidad Complutense de Madrid, Biology) during **2006/2007**.
- **Teacher** at Ridan School of Sciences (C\ Princesa, 76, 1º izda., 28008 Madrid) from June 2001 to September 2003 (**1200 hours**), teaching the following subjects: Introduction to Physics, Mechanics, Electromagnetism, Physical-Chemistry, Physics of Biological Processes.
- **Participation in teaching activities for Laboratory Technicians of the Leonardo International Program** during October 2008.
- **Biochemistry Professor** at CEDAM Academy. From 2011/2012.
- **Direction of Summer Practices for Bachelor Students.**
 - Carlos Sánchez Priego, Biotechnology Degree Student, Universidad Francisco de Vitoria. Summer 2012.

- Gema Cadenas Pontaque, Biomedicine Degree Student, Universidad de Lérida. 2012 / 2013.

EXPERIENCE AS REVIEWER

- Reviewer for ***PLOS ONE Journal*** in November 2015.
- Reviewer for ***Redox Biology*** in November 2018.
- Reviewer for ***Cells*** since October 2022.
- Reviewer for ***International Journal Of Molecular Sciences*** since November 2022.

PARTICIPATION IN DIVULGATIVE PROJECTS

- **6th Scientific Dissemination-Steem Conferences at Instituto Príncipe Felipe.** March 2023.
- **Speaker at the round table on career guidance at Aula 2023.** March 2023
- **“Find your scientific vocation at CNIC”.** XVIII Week of Science, 2018.
- **Coordinator of the activity “Proteins, the machines that move your heart”,** at the CNIC stand at VIII “Finde Científico”, 27-28 May 2017, MUNCYT, Madrid.
- **“Did you know...? An approach to the utility of science”.** Year of Science 2007, continued 2008.
- **“Did you know that scientific discoveries enhance our quality of life? VII Week of Science 2007.**
- **“Introduction to protein separation techniques. Cromatography and centrifugation”.** VII y VIII Weeks of Science, 2007 y 2008.
- **“Discovering nanorobots. Protein purification”.** IX Week of Science, 2009.
- **“Discovering proteins”.** X Week of Science, 2010.
- **“Proteins have chemistry”.** XI Week of Science, 2011.
- **“Isolating proteins, the software of life”.** XII Week of Science, 2012.
- **“The National Centre of Biotechnology”.** 2011. Guide to a visit by 96 pupils from IES Llanes (Llanes, Asturias), IES San Matías (La Laguna, Tenerife), IES La Torreña (Elda, Alicante) and IES Zaframagón (Olvera, Cádiz).
- **“Can we trap cells with light?”.** Broadcasting an experiment via twitter. CNB-CSIC and IMDEA-Nanociencia. XII Week of Science, 2012.

DIVULGATIVE ARTICLES

- **“Behind the physical steps of the evolution of the storage of genetic information”.** *Madri+d, Analysis*, February 2013.

MASS MEDIA

- **“Towards genetic information technologies”.** *El País, Society*, January, 22nd, 2013.
- **Interview in Televisión Española and Onda Cero** during the visit of Doña Sofía, Queen of Spain, to the National Center of Biotechnology.

TALKS

- **“Did you know that the discovery of the electromagnetic spectrum allows today diagnosis of cancer?”.** Divulgative conferences to high-school students, 2007, 2008 and 2009.
- **“Crystallization of proteins”.** Department of Biochemistry and Molecular Biology, UCM, 2006.
- **“Calorimetry applied to the study of proteins”.** PhD Programs on Biochemistry, Molecular Biology and Biomedicine and Chemical Science and Technology, UCM (2006/07 to present).
- **“Single-molecule techniques applied to the study of proteins”.** PhD Programs on Biochemistry, Molecular Biology and Biomedicine and Chemical Science and Technology, UCM (2010/11).
- **“Evolution of proteins”.** PhD Programs on Biochemistry, Molecular Biology and Biomedicine and Chemical Science and Technology, UCM (2010/11).
- **“Instrumentation in electrophoretic techniques”.** Bachelor in Biology Degree, UCM (2003/04 to 2008/09).
- **“Walking on light. A short walk around the electromagnetic spectrum”.** Bachelor in Biology Degree, UCM (2007/08 and 2008/09).
- **“Protein biosynthesis, structure and function”.** San Viator School, Madrid (2007/2008).
- **“Nanoscience and nanotechnology: a trip to the future from the small”.** IMDEA-Nanoscience (2010).
- **“Biotechnology. History and applications”.** Centro Nacional de Biotecnología (2011)

- **“Prebiotic evolution and RNA world”**. PhD program on Biophysics, UAM (2011/2012, 2012/2013).
- **“Optical tweezers at the National Center of Biotechnology”**. Brief presentation during the visit of Doña Sofía, Queen of Spain, to the National Center of Biotechnology.
- **“Moving towards the future: specialization versus multidisciplinary”**. Opening lectura at the I Congreso de Encuentro Universitario IES Carlos III en Toledo, september 2017.
- **“From protein mechanics to cardiac function: how posttranslational modifications modulate myocardium elasticity”**. Invited talk at Centro Nacional de Biotecnología, 9 February 2023.
- **“The Molecular Mechanics of the Heart: how basic research impacts our lives”**. Instituto Príncipe Felipe. March 2023.
- **“Awakening scientific vocations”**. Instituto Príncipe Felipe. April 2024.

PARTICIPATION IN COOPERATION PROJECTS

- **“Informatics room at San Ignacio de Moxos Foundation (Bolivia)”**. Coordinated by UCM.