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Curriculum Vitae

Jorge Alegre-Cebollada, PhD

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[RESEARCHERID PROFILE](#)

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CURRENT POSITION

National Institute for Cardiovascular Research, CNIC-Carlos III (Madrid, Spain) from 2014
Associate Professor – Group Leader (from 2019); Assistant Professor - Group Leader (2014-2019)

Complutense University of Madrid, Department of Biochemistry and Molecular Biology (Madrid, Spain) from 2020
Honorary Professor

EDUCATION

Complutense University, Department of Biochemistry and Molecular Biology (Madrid, Spain) 2008
Ph. D. Biochemistry (Summa Cum Laude)
Emphasis in lipid-protein interactions by spectroscopy, calorimetry and molecular biology
Dissertation Title: Mechanism of membrane pore formation by the actinoporin Sticholysin II
Supervisors: **Prof. Álvaro Martínez del Pozo** and **Prof. José G. Gabilanes**

Complutense University, Department of Biochemistry and Molecular Biology (Madrid, Spain) 2003
M. Sc. Biochemistry (GPA: 3.86/4.00)
Thesis Title: Production of a strain of *L. lactis* expressing the ribotoxin α -sarcin
Supervisor: **Prof. Álvaro Martínez del Pozo**

Complutense University, School of Chemistry (Madrid, Spain) 2001
B. Sc. Chemistry (GPA: 3.67/4.00)

RESEARCH POSITIONS

Columbia University, Department of Biological Sciences (New York, US) 2013-2014
Associate Research Scientist
Topic: Single-molecule force-spectroscopy by Atomic Force Microscopy and Magnetic Tweezers
Adviser: **Prof. Julio M. Fernández**

Columbia University, Department of Biological Sciences (New York, US) 2008-2013
Postdoctoral Research Scientist
Topic: Single-molecule force-spectroscopy by Atomic Force Microscopy
Adviser: **Prof. Julio M. Fernández**

Free University of Brussels, Department of Structure and Function of Biological Membranes (Belgium) 2005
Visiting scholar (3 months)
Topic: ATR infrared spectroscopy applied to sticholysin II bound to lipids
Supervisor: **Prof. Erik Goormaghtigh**

RESEARCH INTERESTS

- Emergent mechanical properties of proteins in cardiac muscle
- Interplay between redox biochemistry and protein mechanics
- Intramolecular covalent bonds in proteins: mechanical stability, reactivity, biological role, biosynthesis
- Protein biomaterials

GRANTS AWARDED AS PRINCIPAL INVESTIGATOR

- 1. European Research Council** 2021-2026
ERC-Consolidator
Title: “Uncovering Protein Mechanics in Physiology and Disease (ProtMechanics-Live)”
Reference: 101002927
- 2. Myokardia (California, US)** 2020-2021
MyoSeeds Program
Title: “Titin Allelic Discrimination to Uncover Pathophysiology Mechanisms in DCM”
- 3. Ministry of Science, Innovation and Universities (Spain)** 2019-2020
Europa Investigación
Title: “Towards the ERC-consolidator: Novel animal and cell models to probe protein nanomechanics in health and disease”
Reference: EIN2019-102966
- 4. Regional Government of Madrid (Spain)** 2019-2022
Programas de Actividades de I+D
Title: “New technologies for the study of biological nanomachines”
Coordinated proposal –Tec4Bio (6 PIs)
Reference: P2018/NMT-4443
- 5. Ministry of Economy and Competitiveness (Spain)** 2018-2020
Programa Estatal de Fomento de la Investigación Científica y Técnica de Excelencia
Title: “Emergent mechanical properties of proteins in the myocardium and in biomaterials with biotechnological applications”
Reference: BIO2017-83640-P
- 6. Ministry of Economy and Competitiveness (Spain)** 2019-2020
Redes de Excelencia
Title: “Network of excellence in Mechanobiology”
Coordinated proposal (10 PIs)
Reference: BFU2017-90692-REDT
- 7. Ministry of Economy and Competitiveness (Spain) – CNIC** 2017-2019
Intramural Grants Program – Severo Ochoa
Title: Immune – Mechanical Crosstalk in the Cardiomyopathic Heart
Coordinated proposal (2 PIs, coordinator: Alegre-Cebollada)
Reference: 03-2016 IGP
- 8. European Research Area Network on Cardiovascular Diseases – Horizon 2020** 2017-2020
Joint Transnational Call 2016
Title: Metabolic Therapy for Managing Diastolic Heart Failure (MINOTAUR)

Coordinated proposal (5 PIs)

Reference: AC16/00045

9. Regional Government of Madrid (Spain) 2017-2018

Ayudas para la promoción del empleo joven 2016

Reference: PEJ 16/MED/TL-1593

10. Ministry of Economy and Competitiveness (Spain) 2015-2017

Programa Estatal de Fomento de la Investigación Científica y Técnica de Excelencia

Title: “Mechanobiochemistry: from the regulation of muscle elasticity to the production of biomaterials with adjustable stiffness”

Reference: BIO2014-54768-P

11. Ministry of Economy and Competitiveness (Spain) 2015-2020

Ramón y Cajal Program (top candidate in the BFU section)

Reference: RYC-2014-16604

12. CNIC-IIF Marie Curie 2014-2015

International Incoming Fellowship for Young Group Leaders

Reference: FP7-PEOPLE-2010-COFUND-267149

13. National Institute of Allergy and Infectious Diseases (NIH, US) 5/17/13 – 5/16/14

Pathway to Independence Award (K99/R00)

Title: Bacterial Attachment under Mechanical Perturbations

Reference: 1K99AI106072

Duration: K99 Mentored Phase (1 year) + R00 Independent Phase (2 years).

R00 phase was cancelled due to international move.

AWARDS AND HONORS

Spanish Biochemical Society (SEBBM) 2019

Highlighted profile “[Acércate a nuestros científicos](#)”

General Military Hospital (Zaragoza, Spain) 2019

Plenary speaker – Commemorative Conference *N^a S^a del Perpetuo Socorro*

International Union for Pure and Applied Chemistry (IUPAC) 2018

Selected for the [Periodic Table of Younger Chemists](#) – Arsenic

Spanish Biophysical Society 2014

Award to the Best Biophysicist under 33 years

Complutense University (Madrid, Spain) 2008

Annual Award for Best Dissertation in Biochemistry (*Premio Extraordinario Doctorado*)

Spanish Ministry of Science 2004

1st National Award on Biochemistry (*1^{er} Premio Nacional Fin de Carrera*)

Complutense University (Madrid, Spain) 2003

Annual Award for Masters Students (*Premio Extraordinario Licenciatura*)

FELLOWSHIPS

Fundación Ibercaja (Zaragoza, Spain) Postdoctoral Fellowship	2011-2012
Fundación Alfonso Martín Escudero (Madrid, Spain) Postdoctoral Fellowship	2008-2010
Fundación Caja Madrid (Madrid, Spain) Postdoctoral Fellowship	2008
Spanish Ministry of Science Research Fellowship for Graduate Students (FPU program)	2004-2008
Spanish Ministry of Education Research Fellowship for Undergraduate Students	2002-2003

INSTITUTIONAL RESPONSIBILITIES

CNIC (Madrid, Spain) Coordinator, Cell and Developmental Biology Area	from 2020
Spanish Society of Biochemistry and Molecular Biology (SEBBM) Vocal, committee for selection of new members	from 2018
CNIC (Madrid, Spain) Committee for the generation of an institutional repository ISCIII/CNIC/CNIO (Repisalud)	2017-2018
CNIC (Madrid, Spain) Member of the editorial committee, CNIC-Pulse Magazine	from 2016
CNIC (Madrid, Spain) Scientific Activities, Web and Library committee (Coordinator 2015-2019)	from 2015
CNIC (Madrid, Spain) Coordinator, Working Group – Proteomics Core Facility	from 2015
CNIC (Madrid, Spain) Committee for the renewal of the institutional web site	2015

PROFESSIONAL MEMBERSHIPS

Member, Spanish Biophysical Society	2007-present
Member, Spanish Biochemical Society	2004-present

PUBLICATIONS

Positive Evaluation 2 Research Periods by Spanish Ministry of Education (“*Sexenios*”): 2004-2009; 2010-2015
Positive Evaluation I3 Program by Spanish Ministry of Science, Education and Universities (2016-2019)

* Shared authorship # Corresponding author

H-index: 24 (Google Scholar), 20 (WoS) (December 2020)

10 most relevant publications

1. Jaime Andrés Rivas-Pardo, Yong Li, Zsolt Mártonfalvi, Rafael Tapia-Rojo, Andreas Unger, Ángel Fernández-Trasancos, Elías Herrero-Galán, Diana Velázquez-Carreras, Julio M. Fernández, Wolfgang A. Linke[#], Jorge Alegre-Cebollada[#]. A HaloTag-TEV genetic cassette for mechanical phenotyping of proteins from tissues (2020). **Nature Communications** **11**, 2060. Selected as paper of the month by the Spanish Biophysical Society. Highlighted by >30 news outlets.
2. Carolina Pimenta-Lopes, Carmen Suay-Corredera, Diana Velázquez-Carreras, David Sánchez-Ortiz, Jorge Alegre-Cebollada[#] (2019). Concurrent Atomic Force Spectroscopy. **Communications Physics** **2**, 91. Selected as paper of the month by the Spanish Biophysical Society.
3. David Giganti, Kevin Yan, Carmen L. Badilla, Julio M. Fernández, Jorge Alegre-Cebollada[#] (2018) Disulfide isomerization reactions in titin immunoglobulin domains enable a mode of protein elasticity. **Nature Communications** **9**:185. Selected as paper of the month by the Spanish Biophysical Society.
4. Jorge Alegre-Cebollada[#]*, Pallav Kosuri*, David Giganti, Edward Eckels, Jaime-Andrés Rivas-Pardo, Nazha Hamdani, Chad M. Warren, R. John Solaro, Wolfgang A. Linke, Julio M. Fernández[#] (2014). S-glutathionylation of cryptic cysteines enhances titin elasticity by blocking protein folding. **Cell**, **156**, 1235-1246. This article was chosen for the cover of the issue.
5. Jorge Alegre-Cebollada[#]*, Pallav Kosuri, Jaime Andrés Rivas-Pardo, Julio M. Fernández[#] (2011). Direct observation of disulfide isomerization in a single protein. **Nature Chemistry**, **3**, 882-887. This article was highlighted in the cover of **Nature Chemistry** and in a **News and Views** article. The article was also featured in **Chemical and Engineering News**.
6. Maria Rosaria Pricolo, Elías Herrero-Galán, Cristina Mazzaccara, Maria Angela Losi, Jorge Alegre-Cebollada[#], Giulia Frisso (2020). Protein Thermodynamic Destabilization in the Assessment of Pathogenicity of a Variant of Uncertain Significance in Cardiac Myosin Binding Protein C. **Journal of Cardiovascular Translational Research**, **13**, 867-877.
7. Pallav Kosuri, Jorge Alegre-Cebollada, Jason Feng, Anna Kaplan, Álvaro Inglés-Prieto, Carmen L. Badilla, Brent R. Stockwell, José M. Sánchez-Ruiz, Arne Holmgren, Julio M. Fernández (2012). Protein folding drives disulfide formation. **Cell**, **151**, 794-806.
8. Jorge Alegre-Cebollada[#]*, Carmen L. Badilla, Julio M. Fernández[#] (2010). Isopeptide bonds block the mechanical extension of pili in pathogenic *Streptococcus pyogenes*. **Journal of Biological Chemistry**, **285**, 11235-11242.
9. Daniel J. Echelman*[#], Jorge Alegre-Cebollada*[#], Carmen L. Badilla, Chungyu Chang, Hung Ton-That, Julio M. Fernández[#] (2016). CnaA domains in bacterial pili are efficient dissipaters of large mechanical shocks. **PNAS**, **113**, 2490-2495.
10. Farees Saqlain, Ionel Popa, Julio M. Fernández[#], Jorge Alegre-Cebollada[#] (2015). A novel strategy for utilizing voice coil servoactuators in tensile tests of low volume protein hydrogels. **Macromolecular Materials and Engineering**, **300**, 369-376.

Additional publications (reverse chronological order):

11. (Preprint) Elías Herrero-Galán, Fernando Domínguez, Inés Martínez-Martín, Cristina Sánchez-González, Natalia Vicente, Laura Lalaguna, Elena Bonzón-Kulichenko, Enrique Calvo, Esther González-López, Marta Cobo-Marcos, Belén Bornstein, Ana Briceño, Juan Pablo Ochoa, Jose Maria Garcia-Aznar, Carmen Suay-Corredera, Maria Rosaria Pricolo, Ángel Fernández-Trasancos, Diana Velázquez-Carreras, Claudio Badía Careaga, Belén Prados, Francisco

Gutiérrez-Agüera, Mahmoud Abdellatif, Simon Sedej, Peter P. Rainer, David Giganti, Giovanna Giovinazzo, Juan A. Bernal, Raúl Pérez-Jiménez, Torsten Bloch Rasmussen, Thomas Morris Hey, Inmaculada Vivo-Ortega, Jesús Piqueras-Flores, Enrique Lara-Pezzi, Jesús Vázquez, Pablo García-Pavía[#], Jorge Alegre-Cebollada[#] (2020). Conserved cysteines in titin sustain the mechanical function of cardiomyocytes. Available in [bioRxiv](#).

12. (Preprint) Carmen Suay-Corredera, Maria Rosaria Pricolo, Diana Velázquez-Carreras, Carolina Pimenta-Lopes, David Sánchez-Ortiz, Iñigo Urrutia-Irazabal, Silvia Vilches, Fernando Dominguez, Giulia Frisso, Lorenzo Monserrat, Pablo García-Pavía, Elías Herrero-Galán, Jorge Alegre-Cebollada[#] (2020). Nanomechanical phenotypes in cMyBP-C mutants that cause hypertrophic cardiomyopathy. Available in [bioRxiv](#).
13. (Preprint) Carmen Suay-Corredera, Maria Rosaria Pricolo, Elías Herrero-Galán, Diana Velázquez-Carreras, David Sánchez-Ortiz, Diego García-Giustiniani, Javier Delgado, Juan José Galano-Frutos, Helena García-Cebollada, Silvia Vilches, Fernando Domínguez, María Sabater Molina, Roberto Barriales-Villa, Giulia Frisso, Javier Sancho, Luis Serrano, Pablo García-Pavía, Lorenzo Monserrat, Jorge Alegre-Cebollada[#] (2020) Protein haploinsufficiency drivers identify *MYBPC3* mutations that cause hypertrophic cardiomyopathy. Available in [medRxiv](#).
14. José A. Nicolás-Ávila, Ana V. Lechuga-Vieco, Lorena Esteban-Martínez, María Sánchez-Díaz, Elena Díaz-García, Demetrio J. Santiago, Andrea Rubio-Ponce, Jackson LiangYao Li, Akhila Balachander, Juan A. Quintana, Raquel Martínez-de-Mena, Beatriz Castejón-Vega, Andrés Pun-García, Paqui G.Través, Elena Bonzón-Kulichenko, Fernando García-Marqués, Lorena Cussó, Noelia A-González, Andrés González-Guerra, Marta Roche-Molina, Sandra Martín-Salamanca, Georgiana Crainiciuc, Gabriela Guzmán, Jagoba Larrazabal, Elías Herrero-Galán, Jorge Alegre-Cebollada, Greg Lemke, Carla V. Rothlin, Luis Jesús Jimenez-Borreguero, Guillermo Reyes, Antonio Castrillo, Manuel Desco, Pura Muñoz-Cánoves, Borja Ibáñez, Miguel Torres, Lai Guan Ng, Silvia G. Priori, Héctor Bueno, Jesús Vázquez, Mario D. Cordero, Juan A.Bernal, José A.Enríquez, Andrés Hidalgo (2020). A Network of Macrophages Supports Mitochondrial Homeostasis in the Heart. *Cell*, **183**, 94-109.
15. Asier Echarri, Dácil M. Pavón, Sara Sánchez, María García-García, Enrique Calvo, Carla Huerta-López, Diana Velázquez-Carreras, Christine De Viaris, Nicholas Ariotti, Ana Lázaro-Carrillo, Raffaele Strippoli, David De Sancho, Jorge Alegre-Cebollada, Christophe Lamaze, Robert G. Parton and Miguel A. Del Pozo (2019). An Abl-FPB17 mechanosensing system couples local plasma membrane curvature and stress fiber remodeling during mechanoadaptation. *Nature Communications*, **10**, 5828.
16. (Review) Elías Herrero-Galán[#], Inés Martínez-Martín, Jorge Alegre-Cebollada[#] (2019) Redox regulation of protein nanomechanics in health and disease: Lessons from titin. *Redox Biology*, **21**, 101074.
17. Aitor Manteca, Jörg Schönfelder, Alvaro Alonso-Caballero, Marie J. Fertin, Nerea Barruetaña, Bruna F. Faria, Elías Herrero-Galán, Jorge Alegre-Cebollada, David De Sancho, Raul Perez-Jimenez (2017). Mechanochemical evolution of the giant muscle protein titin as inferred from resurrected proteins. *Nature Structural and Molecular Biology*, **24**, 652-657. This article was chosen for the cover of the issue.
18. Esperanza Rivera-de-Torre, Sara García-Linares, Jorge Alegre-Cebollada, Javier Lacadena, José G. Gavilanes and Álvaro Martínez-del-Pozo (2016) Synergistic action of actinoporin isoforms from the same sea anemone species assembled into functionally active heteropores. *Journal of Biological Chemistry*, **291**, 14109-14119.
19. Jaime Andrés Rivas-Pardo, Jorge Alegre-Cebollada, César A. Ramírez-Sarmiento, Julio M. Fernández, Victoria Guixé (2015) Identifying sequential substrate binding at the single-molecule level by enzyme mechanical stabilization. *ACS Nano*, **9**, 3996-4005.
20. Carles Solsona, Thomas B. Kahn, Carmen L. Badilla, Cristina Álvarez-Zaldienas, Juan Blasi, Julio M. Fernandez, Jorge Alegre-Cebollada (2014). Altered thiol chemistry in human amyotrophic lateral sclerosis-linked mutants of superoxide dismutase 1. *Journal of Biological Chemistry*, **289**, 26722-26732.

21. Ionel Popa, Ronen Berkovich, Jorge Alegre-Cebollada, Carmen L. Badilla, Jaime Andres Rivas-Pardo, Yukinori Taniguchi, Masaru Kawakami, Julio M. Fernández (2013). Nanomechanics of HaloTag Tethers. **Journal of the American Chemical Society**, **135**, 12762-12771.
22. Ionel Popa, Pallav Kosuri, Jorge Alegre-Cebollada, Sergi Garcia-Manyes, Julio M. Fernandez (2013). Force dependency of biochemical reactions measured by single molecule force-clamp spectroscopy. **Nature Protocols**, **8**, 1261-76.
23. David Giganti, Jorge Alegre-Cebollada, Saioa Urresti, David Albesa-Jové, Ane Rodrigo-Unzueta, Natalia Comino, Michael Kachala, Sonia López-Fernández, Dmitri I. Svergun, Julio M. Fernández, Marcelo E. Guerin (2013). Conformational plasticity of the essential membrane-associated mannosyltransferase PimA from Mycobacteria. **Journal of Biological Chemistry**, **288**, 29797-29808.
24. Sara García-Linares, Inés Castrillo, Marta Bruix, Margarita Menéndez, Jorge Alegre-Cebollada; Alvaro Martinez-del-Pozo, José G Gavilanes (2013). Three-dimensional structure of the actinoporin sticholysin I. Influence of long-distance effects on protein function. **Archives of Biochemistry and Biophysics**, **532**, 39-45. This article was chosen for the cover of the issue.
25. (*Book chapter*) Raul Perez-Jimenez, Jorge Alegre-Cebollada (2013). **Enzyme catalysis at the single-molecule level**, in “Single-molecule Studies of Proteins” (Ed. Andres F. Oberhauser), Springer, New York, US.
26. Sergi Garcia-Manyes, Carmen L. Badilla, Jorge Alegre-Cebollada, Yalda Javadi, Julio M. Fernández (2012). Spontaneous dimerization of the titin Z1-Z2 domains induces a strong nano-mechanical anchoring. **Journal of Biological Chemistry**, **287**, 20240-20247.
27. (*Preview*) Jorge Alegre-Cebollada, Pallav Kosuri, Julio M. Fernández (2011). Protease power strokes force proteins to unfold. **Cell**, **145**, 339-340.
28. Raúl Perez-Jimenez, Álvaro Inglés-Prieto, Ziming Zhao, Inmaculada Sanchez-Romero, Jorge Alegre-Cebollada, Pallav Kosuri, Sergi Garcia-Manyes, Arne Holmgren, José Manuel Sanchez-Ruiz, Erik A. Gaucher, Julio M. Fernandez (2011). Single-molecule paleoenzymology probes the chemistry of resurrected enzymes. **Nature Structural and Molecular Biology**, **18**, 592-596.
29. (*Review*) Lucía García-Ortega, Jorge Alegre-Cebollada, Sara García-Linares, Marta Bruix, Álvaro Martínez del Pozo, José G. Gavilanes (2011). The behaviour of sea anemone actinoporins at the water-membrane interface. **BBA-Biomembranes**, **1808**:2275-2288.
30. Miguel A. Pardo-Cea, Inés Castrillo; Jorge Alegre-Cebollada, Álvaro Martínez-del-Pozo, José G. Gavilanes, Marta Bruix (2011). Intrinsic local disorder and a network of charge-charge interactions are key to actinoporin membrane disruption and cytotoxicity. **FEBS Journal**, **278**, 2080-2089.
31. (*Review*) Jorge Alegre-Cebollada, Raúl Pérez-Jiménez, Pallav Kosuri, Julio M. Fernández (2010). Single-molecule force spectroscopy approach to enzyme catalysis. **Journal of Biological Chemistry**, **285**, 18961-18966.
32. Inés Castrillo, Nelson A. Araujo, Jorge Alegre-Cebollada, José G. Gavilanes, Álvaro Martínez del Pozo, Marta. Bruix (2010). Specific interactions of sticholysin I with model membranes: an NMR study. **PROTEINS: Structure, Function, and Bioinformatics**, **78**, 1959-1970.
33. Miguel A. Pardo-Cea, Jorge Alegre-Cebollada, Álvaro Martínez-del-Pozo, José G. Gavilanes, Marta Bruix (2010). ¹H, ¹³C, and ¹⁵N NMR assignments of StnII-Y111N, a highly impaired mutant of the sea anemone actinoporin Sticholysin II. **Biomolecular NMR Assignments**, **4**, 69-72.

34. Inés Castrillo, Jorge Alegre-Cebollada, Álvaro Martínez del Pozo, José G. Gavilanes, Jorge Santoro and Marta Bruix (2009). ^1H , ^{13}C , and ^{15}N NMR resonance assignments of the actinoporin Sticholysin I. **Biomolecular NMR Assignments**, **3**, 5-7.
35. Inés Castrillo, Jorge Alegre-Cebollada, Álvaro Martínez del Pozo, José G. Gavilanes, Marta Bruix (2009). $(1)\text{H}$, $(13)\text{C}$, and $(15)\text{N}$ NMR assignments of StnII-R29Q, a defective lipid binding mutant of the sea anemone actinoporin Sticholysin II. **Biomolecular NMR Assignments**, **3**, 239-241.
36. Elisa Álvarez-García, Jorge Alegre-Cebollada, Eva Batanero, Vicente Monedero, Gaspar Pérez-Martínez, Rosa García-Fernández, José G. Gavilanes and Álvaro Martínez del Pozo (2008). *Lactococcus lactis* as a vehicle for the heterologous expression of fungal ribotoxin variants with reduced IgE-binding affinity. **Journal of Biotechnology**, **134**, 1-8.
37. (Review) Nelson Carreras-Sangrà, Elisa Álvarez-García, Elías Herrero-Galán, Jaime Tomé, Javier Lacadena, Jorge Alegre-Cebollada, Mercedes Oñaderra, José G. Gavilanes and Álvaro Martínez del Pozo (2008). The therapeutic potential of fungal ribotoxins. **Current Pharmaceutical Biotechnology**, **9**, 153-160.
38. (Book chapter) Elías Herrero-Galán, Elisa Álvarez-García, Nelson Carreras-Sangrà, Javier Lacadena, Jorge Alegre-Cebollada, Álvaro Martínez del Pozo, Mercedes Oñaderra and José G. Gavilanes (2008). **Fungal ribotoxins: structure, function and evolution**, in “Microbial toxins: current research and future trends” (Ed. Thomas Proft). Horizon Bioscience, Norwich, UK.
39. Jorge Alegre-Cebollada, Michela Cunietti, Elías Herrero-Galán, José G. Gavilanes and Álvaro Martínez del Pozo (2008). Calorimetric scrutiny of lipid binding by sticholysin II toxin mutants. **Journal of Molecular Biology**, **382**, 920-930.
40. Jorge Alegre-Cebollada, Giorgia Clementi, Michela Cunietti, Christian Porres, Mercedes Oñaderra, José G. Gavilanes and Álvaro Martínez del Pozo (2007). Silent mutations at the 5'-end of the cDNA of actinoporins from the sea anemone *Stichodactyla helianthus* allow their heterologous overproduction in *E. coli*. **Journal of Biotechnology**, **127**, 211-221.
41. (Review) Javier Lacadena, Elisa Álvarez-García, Nelson Carreras-Sangrà, Elías Herrero-Galán, Jorge Alegre-Cebollada, Lucía García-Ortega, Mercedes Oñaderra, José G. Gavilanes and Álvaro Martínez del Pozo (2007). Fungal ribotoxins: molecular dissection of a family of natural killers. **FEMS Microbiology Reviews**, **31**, 212-237.
42. Jorge Alegre-Cebollada[#], Álvaro Martínez del Pozo, José G. Gavilanes[#] and Erik Goormaghtigh (2007). Infrared spectroscopy study on the conformational changes leading to pore formation of the toxin sticholysin II. **Biophysical Journal**, **93**, 3191-3201.
43. (Review) Jorge Alegre-Cebollada, Mercedes Oñaderra, José G. Gavilanes and Álvaro Martínez del Pozo (2007). Sea anemone actinoporins: The transition from a folded soluble state to a functionally active membrane-bound oligomeric pore. **Current Protein and Peptide Science**, **8**, 558-572.
44. Jorge Alegre-Cebollada, Ignacio Rodríguez-Crespo, José G. Gavilanes and Álvaro Martínez del Pozo (2006). Detergent-resistant membranes are platforms for actinoporin pore-forming activity on intact cells. **The FEBS Journal**, **273**, 863-871.
45. Jorge Alegre-Cebollada, Valle Lacadena, Mercedes Oñaderra, José M. Mancheño, José G. Gavilanes and Álvaro Martínez del Pozo (2004). Phenotypic selection and characterization of randomly produced non-haemolytic mutants of the toxic sea anemone protein sticholysin II. **FEBS Letters**, **575**, 14-18.

ORAL PRESENTATIONS AND INVITED TALKS

1. **Invited presentation (postponed due to covid19)** 2020
International Cardiovascular Symposium at King's College London-BHF Centre of Research Excellence
2. **Invited presentation (postponed due to covid19)** 2020
7th International Iberian Biophysics Congress, Coimbra, Portugal
3. **Invited seminar (postponed due to covid19)** 2020
EMBL-Hamburg, Germany
4. **Invited seminar (postponed due to covid19)** 2020
Center of Biological Research (CIB), Madrid, Spain
5. **Invited seminar (postponed due to covid19)** 2020
Department of Chemistry, University of Basel, Switzerland
6. **Oral presentation** 2020
64th Biophysical Society meeting, San Diego, CA
7. **Invited lecture** 2019
Chemistry Day (*Foro Química y Sociedad*), Palma de Mallorca, Spain
8. **Keynote lecture** 2019
Symposium celebrating the 250th anniversary of Semmelweis University, Budapest, Hungary
9. **Invited talk** 2019
Meeting of the National Mechanobiology Network, Zaragoza, Spain
10. **Invited seminar** 2019
Department of Molecular Medicine and Medical Biotechnology, University of Naples Federico II, Italy
11. **Invited talk** 2018
XII Course on Cardiovascular Pathophysiology, CNIC, Madrid, Spain
12. **Invited talk** 2018
41st Congress of the Spanish Society of Biochemistry and Molecular Biology, Santander, Spain
13. **Oral presentation** 2018
47th European Muscle Conference, Budapest, Hungary
14. **Invited talk** 2018
2nd ELECMI International Workshop, Universidad de Zaragoza, Spain
15. **Invited seminar** 2018
IQFR-CIB Hub on Integrative Structural Biochemistry (V), Madrid, Spain
16. **Invited seminar** 2018
Biodonostia Health Research Institute, San Sebastian, Spain
17. **Invited talk** 2018
Summer School “Mechanobiology of polarised cells”, Les Houches, France

18. **Invited talk** 2018
7th Multifrequency AFM Conference, Madrid, Spain
19. **Invited talk** 2017
FEBS3+ 1st Joint Meeting of the French-Portuguese-Spanish Biochemical and Molecular Biology Societies
Barcelona, Spain
20. **Oral presentation** 2017
46th European Muscle Conference, Potsdam, Germany
21. **Invited seminar** 2017
Department of Cell Biology and Immunology, Center for Molecular Biology (CBM-Severo Ochoa), Madrid, Spain
22. **Invited seminar** 2017
IMDEA – Nanoscience, Madrid, Spain
23. **Invited seminar** 2017
Department of Structural and Computational Biology, University of Vienna & Max Perutz Laboratories, Austria
24. **Invited seminar** 2017
Institute of Science and Technology, Austria
25. **Invited seminar** 2017
Institute of Biomedicine of Seville, Spain
26. **Oral presentation and co-chair of the platform “Cardiac Muscle Mechanics and Structure”** 2017
61st Biophysical Society meeting, New Orleans, LA
27. **Invited talk** 2016
Mechanobiology across Networks Conference, Barcelona, Spain
28. **Invited seminar** 2016
Department of Condensed Matter Physics, University of Barcelona, Spain
29. **Oral presentation** 2016
39th Congress of the Spanish Society of Biochemistry and Molecular Biology, Salamanca, Spain
1st Workshop of the Emerging Investigator
30. **Oral presentation** 2016
5th International Iberian Biophysics Congress, Porto, Portugal
31. **Invited Seminar** 2016
Department of Physiology and Cardiothoracic Surgery, University of Porto, Portugal
32. **Invited Seminar** 2015
Institute of Materials Science of Madrid (ICMM-CSIC), Madrid, Spain
33. **Invited seminar** 2015
Department of Biochemistry and Molecular Biology I, Complutense University, Madrid, Spain
34. **Invited seminar** 2015
Medical Research Institute, Hospital Universitario de La Princesa, Madrid, Spain

35. **Oral presentation** 2014
Health in Code, A Coruña, Spain
36. **Invited seminar** 2014
Spanish National Center of Biotechnology (CNB-CSIC), Madrid, Spain
37. **Invited talk** 2014
XIV International Congress of the Spanish Biophysical Society, Alcalá de Henares, Spain
38. **Oral presentation and co-chair of the platform “Fiber & Molecular Mechanics & Structure”** 2014
58th Biophysical Society meeting, San Francisco, CA
39. **Oral presentation** 2014
Department of Physiology and Biophysics, University of Washington, Seattle, WA
40. **Oral presentation** 2014
Earl Stadtman Symposium on Molecular Biology and Biochemistry, NIH, Bethesda, MD
41. **Oral presentation** 2013
Department of Biochemistry, UNAM, Mexico City, Mexico
42. **Invited speaker** 2013
3rd USA-Mexico Workshop in Biological Chemistry. Guanajuato, Mexico
43. **Oral presentation** 2013
Department of Cardiovascular Physiology, Ruhr University Bochum, Germany
44. **Oral presentation** 2013
Department of Medicine, Microbiology Section, Imperial College London, UK
45. **Oral presentation** 2013
Department of Molecular Biology and Biotechnology, University of Sheffield, UK
46. **Oral presentation** 2013
National Institute of Cardiovascular Research (CNIC), Madrid, Spain
47. **Oral presentation** 2013
Department of Biochemistry, University of Oxford, UK
48. **Oral presentation** 2012
Gordon Research Seminar, “Thiol-Based Redox Regulation & Signalling”, Lewiston, ME
49. **Oral presentation and co-chair of the platform “Molecular Mechanics & Force Spectroscopy”** 2012
56th Biophysical Society meeting, San Diego, CA
50. **Oral presentation** 2012
Physical Chemistry Seminar Series, Department of Chemistry, Columbia University, NY
51. **Oral presentation** 2011
Departmental Retreat, Department of Biological Sciences, Columbia University, NY

52. **Oral presentation** 2011
 XI Spanish Biophysical Society meeting, Murcia, Spain

53. **Oral presentation** 2004
 27th Congress of the Spanish Society of Biochemistry and Molecular Biology, Lleida, Spain

ORGANIZATION OF SCIENTIFIC EVENTS

42th SEBBM conference (Madrid, Spain) 2019
 Scientific Committee

Joint 12th EBSA and 10th ICBP-IUPAP Biophysics Congress (Madrid, Spain) 2019
 Organizing Committee

CNIC (Madrid, Spain) 2016
 Co-organizer of the VI CNIC conference “Mechanical forces in physiology and disease”
 Competitive funding obtained: EMBO Keynote Lecture (1000 EUR), EMBO Young Investigator Lecture (800 EUR),
 Company of Biologists (£2000), SBE (600 EUR), SEBBM (1000 EUR)

CNIC (Madrid, Spain) from 2014
 Co-organizer of the “Mechanobiology” series of Seminars

TEACHING EXPERIENCE

Complutense University, Degree in Biochemistry from 2020
Guest lecturer in the course “Biophysics and Bioinformatics”

University of Zaragoza, Master in Biomedical Engineering (Zaragoza, Spain) 2020
Guest lecturer in the course “Cell Mechanobiology”

Complutense University, Summer School (El Escorial, Spain) 2019
 Lecturer in course “2019: international year of the periodic table. The impact of Chemistry in Society”

Complutense University of Madrid, Master in Biomedical Physics (Madrid, Spain) from 2018
Guest lecturer in the course “Molecular Biophysics”
 Topic: “Protein Mechanics by Single-Molecule Methods”

Complutense University, Summer School (El Escorial, Spain) 2017
 Lecturer in course “New manners of dissemination of research in health: beyond classical scientific publications”

Autonomous University, Master in Biomolecules and Cell Dynamics (Madrid, Spain) from 2017
Guest lecturer in the course “Biomolecular nanomachines”
 Topic: “The machinery of muscle contraction”

Autonomous University (Madrid, Spain) from 2016
Guest lecturer in the Masters Program in Molecular Biosciences
 Topic: “Moral dilemmas in scientific research”

CNIC and Autonomous University of Madrid, Master in Molecular Biomedicine (Madrid, Spain) 2017-2020
Coordinator of the course “Insight into cardiovascular pathology research”

Curriculum Vitae – Jorge Alegre-Cebollada, PhD

- CNIC and Autonomous University of Madrid, Master in Molecular Biomedicine (Madrid, Spain)** from 2016
Guest lecturer in the course “Insight into cardiovascular pathology research”
Topic: “From single molecules to heart disease”
- Complutense University, Degree in Biology (Madrid, Spain)** 2016
Guest lecturer in the course “Biotechnology of Enzymes”, invited by Jesús Pérez-Gil
Topic: “Single-molecule enzymology”
- Complutense University, Degree in Biochemistry (Madrid, Spain)** 2016, 2018
Guest lecturer in the course “Enzymology”, invited by Jesús Pérez-Gil
Topic: “Single-molecule enzymology”
- Complutense University (Madrid, Spain)** 2015
Guest lecturer in the opening session of the Masters Program in Biochemistry, Molecular Biology and Biomedicine
Topic: “Moral dilemmas in scientific research”
- Autonomous University of Madrid – UAM (Madrid, Spain)** 2015
Guest lecturer in the course of Contemporary Humanities: “What do I do now? Problem solving in different situations”
Coordinated by Teresa Sanz García and Félix García Moriyón
Topic: “Moral dilemmas in scientific research”
- Complutense University, Master in Biochemistry, Molecular Biology and Biomedicine (Madrid, Spain)** 2014
Guest lecturer in the course “Protein structure and function and proteomics”, coordinated by Oscar Palomares
Topic: Application of single-molecule techniques to the study of proteins
- Columbia University, Department of Biological Sciences (New York, NY)** 2011, 2013
Guest lecturer in the course “Single-molecule Approaches to Biology”, coordinated by Prof. Julio M. Fernández
1 class per year. An introductory lecture is followed by discussion of recent single-molecule publications
- Spanish Government, ANECA** 2011
Certification to teach at the Assistant Professor level (Spanish equivalent, Profesor Contratado Doctor)
This teaching certification is required to become Assistant Professor at any Spanish University
- Complutense University, Department of Biochemistry and Molecular Biology (Madrid, Spain)** 2003-2008
Teaching Assistant in the Biochemistry Laboratory for Undergraduates
5 Academic Years
20-30 students perform under my guidance basic experiments such as isolation of DNA, determination of kinetic parameters of enzymes, and separation of proteins by chromatography and electrophoresis
- Complutense University, Graduate Program in Biochemistry and Molecular Biology (Madrid, Spain)** 2008
Guest lecturer in the course for graduate students “Structure of Proteins”, coordinated by Prof. Rosalía Rodríguez
Topic: Application of infrared spectroscopy to the study of proteins
- Milan-Bicocca University (Milan, Italy) & Complutense University (Madrid, Spain)** 2005
Co-supervisor of the Thesis work of Masters student Giorgia Clementi
Thesis Title: Heterologous expression and purification of the cytolytic protein Sticholysin I from cytolytic sea anemone *Stichodactyla helianthus*

SUPERVISION AND MENTORING ACTIVITIES

Current postdoctoral scientists

Maria Rosaria Pricolo (since 2019)

Elías Herrero-Galán (since 2014)

Current PhD students

Inés Martínez Martín (since 2017, 2018 BSc in Biochemistry; 2019 MSc in Biophysics with honors, La Caixa Fellow)
Agata Bak (since 2019)
María Sánchez Díaz (since 2017, co-supervised by Andrés Hidalgo, CNIC)
Carmen Suay-Corredera (since 2017, awarded a competitive PhD Fellowship – FPI-SO program BES-2016-076638)
Carla Huerta-López (since 2015, awarded a competitive EMBO-short term fellowship)

Current technicians

Diana Velázquez-Carreras (since 2014)
Manuel Antonio Oriol Muriel (since 2020)
Laura Sen (since 2020)

Current Residents in Medicine

David Sánchez Ortiz (since 2017, 2019 MD with honors)

Current Undergraduate students

Irene Medrano (since 2020)
Iván Zumeta (since 2020)

Complutense University (Spain)

Master Thesis (Laura Sen)

2020

University of Alcalá de Henares (Spain)

Master Thesis (Nallely Nava)

2020

Autonomous University of Madrid (Spain)

Degree Thesis (Francisco Martín Zamora)

2020

Autonomous University of Madrid-UAM (Spain)

Condensed Matter Physics, Nanoscience and Biophysics program
Member of Thesis Committee, Adrián del Valle García

2020

Autonomous University of Madrid-UAM (Spain)

Molecular Biosciences Program

Member of Thesis Committee, Antonio Quílez Álvarez

2020

Autonomous University of Madrid

Master Thesis (Niels Groenewegen)

2019

CNIC

Laboratory rotation – technical personnel (Israel Anguiano)

2019

Autonomous University of Madrid-UAM (Spain)

Soft Matter Physics, Nanoscience and Biophysics Program

Member of Thesis Committee, Pablo David García López

2019

University of Naples Federico II (Italy)

Department of Molecular Medicine and Medical Biotechnology

Member of Thesis Committee, Class of 2017/2018

2019

Autonomous University of Madrid-UAM (Spain)

Neurosciences Program

2019

Curriculum Vitae – Jorge Alegre-Cebollada, PhD

Member of Thesis Committee, María del Carmen Fernández Ramírez

Autonomous University of Madrid-UAM (Spain) 2018
Molecular Biosciences Program

Member of Thesis Committee, Roberto Moreno Vicente

CNIC 2018

Member of Thesis Committee, Cristina Márquez López

University of León 2018

Master Thesis (Andrea Rodríguez Blanco)

Autonomous University of Madrid-UAM (Spain) 2018
Molecular Biosciences Program

Member of Thesis Committee, Minerva Bosch Fortea

King's College London (UK) 2018

Member of Thesis Committee, Amy E. M. Beedle

CNIC 2017-2019

Laboratory rotation – technical personnel (Natalia Vicente)

Autonomous University of Madrid-UAM (Spain) 2017

Condensed Matter Physics, Nanoscience, and Biophysics Program

Member of Thesis Committee, César López Pastrana

University of Barcelona (Spain) 2017

Masters Thesis work (Carolina Lopes)

CNIC 2016

Member of Thesis Committee, Giulio Fulgoni, María García-García

CNIC, European Commission International Training Network “BIOPOL” (Madrid, Spain) 2016-2018

Secondary co-supervisor of PhD students Víctor Jiménez, Antonio Quílez

Complutense University (Madrid, Spain) 2016

Masters Thesis work (Cristina Sánchez, Carmen Suay)

Autonomous University of Madrid-UAM, Molecular Biology PhD Program (Spain) 2016

Member of Thesis Committee, Albert Galera

CNIC (Madrid, Spain) from 2016

Laboratory rotation for MDs who are doing their residency in cardiology (Res@CNIC program)

María Plaza (2016), Andrés Escudero (2017)

Autonomous University of Madrid-UAM, Biophysics PhD Program (Spain) 2015

Member of Thesis Committee, Jörg Schönfelder

University of Seville, Department of Vegetal Biochemistry and Molecular Biology (Spain) 2015

Member of Thesis Committee, Andrés Manuel Vera Gómez

University of Alcalá de Henares (Spain) Undergraduate Thesis work (Cristina Sánchez)	2015
Autonomous University of Madrid-UAM, Department of Condensed Matter (Spain) Member of Thesis Committee, Benjamin Gollnick	2014
CNIC (Madrid, Spain) Laboratory rotation for undergraduate students (CICERONE program) Carmen Suay (2014, 2015), Carla Huerta (2015), Ricardo Esteban (2016), Íñigo Urrutia (2016), Inés Martínez (2017) David Sánchez (2017, 2018), Manuel Mayo (2018), Luis Gutiérrez (2018)	from 2014
Columbia University, Department of Biological Sciences (New York, NY) Laboratory rotation (graduate students) Daniel Echelman (MD/PhD, 2013), Edward Eckels (MD/PhD, 2012), Kausik Regunath (PhD-Biology, 2010)	2010-2013
Columbia University, Department of Biological Sciences (New York, NY) Thesis work (Pallav Kosuri)	2012
Columbia University, Department of Biological Sciences (New York, NY) Summer rotation program for undergraduate students (SURF program) Farees Saqlain (2013), Ido Haimi (2012)	2012, 2013
Complutense University, Department of Biochemistry and Molecular Biology (Madrid, Spain) Rotation program for international undergraduate students (ERASMUS) Michela Cunietti (Italy, 2006), Giorgia Clementi (Italy, 2005), Christian Porres (Germany, 2004)	2004-2006

SERVICE AND OUTREACH

Ad hoc reviewer

Scientific Journals: Nature Communications, eLife, PNAS, JACS, ACS Nano, Redox Biology, PLOS-One, Biophysical Journal, BBA-Biomembranes, BBA-Molecular Cell Research, Scientific Reports, Protein Science, Journal of Chemical Physics, Nucleus, Annals of Biomedical Engineering

Funding agencies: H2020, Human Frontier Science Program, Spanish National Agency of Evaluation (ANEP), International Foundation for Science, Slovenian Research Agency (ARRS), ProteoRed

Promotion committees: University of Oxford

Biophysical Reviews Member of the Editorial Board	from 2020
Opinion Article – SBE’s Newsletter (http://biofisica.info/) Seeing the science glass half full	2020
Outreach Organization of practical workshops during Madrid’s Science week at CNIC and at local schools	yearly
Opinion Article – NIAIA website Who does Science belong to? (in Spanish, <i>¿A quién pertenece la ciencia?</i>)	2019
Outreach, ISCIII Presentation of the National Catalogue in Health Science	2018

Opinion Article – NIAIA website Moral dilemmas in research (in Spanish, <i>Los dilemas morales en la investigación científica</i>)	2018
Outreach, CNIC Organization of activity “Meet research groups” within the “Acércate” program for High School students	from 2018
ERA-CVD Minotaur project Dissemination Manager	2017-2019
Spanish Foundation for Science and Technology (FECYT) Coordinator of CNIC’s stand “ <i>Tu sistema cardiovascular al descubierto</i> ” in the Science Fair “ <i>Finde Científico</i> ”	2017
Spanish National Agency of Evaluation (ANEP) <i>Selection committee Ramón y Cajal Program (Biomedicine)</i>	2017
Popular science, SBE’s Newsletter Eric Betzig “super resolves” the way to ground-breaking science	2017
Spanish National Agency of Evaluation (ANEP) <i>Selection committee Ramón y Cajal Program (Medicine)</i>	2016
Nanotechnology <i>Guest editor of a focus issue on Protein Folding</i>	2016
NIAIA group – Training and research in solving moral problems <i>Member</i>	from 2015
Spanish Society of Biochemistry and Molecular Biology (SEBBM) <i>Junior representative at CNIC</i>	from 2015
Popular science, SBE’s Newsletter (in Spanish) Title of the article: La Medicina y la Biofísica . (<i>Medicine and Biophysics</i>)	2015
Spanish Biophysical Society (SBE) <i>Editorial Committee, SBE’s Newsletter</i> http://biofisica.info/	from 2014
Popular science, website of the Spanish Society of Biochemistry and Molecular Biology (in Spanish) Title of the article: <i>Jugando en el laboratorio con moléculas únicas</i> (Playing with single-molecules)	2011
Popular science article, <i>Investigación y Ciencia</i> journal (in Spanish) Title of the article: <i>Viaje molecular al pasado</i> (Molecular travel to the past) Co-authors: Raúl Pérez-Jiménez, Jorge Alegre-Cebollada , Julio M. Fernández.	2011
Workshop for the General Public, 7th Science Week, Madrid, Spain <i>Co-organizer</i> Topic: Introduction to protein separation techniques: chromatography and ultracentrifugation	2007

APPEARANCES IN THE MEDIA

El País Interview (Sep 28 th) – Back Page	2018
Diario Médico	2017
La Razón Interview (May 17 th)	2015
Heraldo de Aragón – Tercer Milenio Interview (November 25 th)	2014
Aragon TV Featured in the Evening News (July 29 th)	2014
Spanish National Radio (RNE) Interview (In Spanish) – A Hombros de Gigantes (June 30th) http://www.rtve.es/alacarta/audios/a-hombros-de-gigantes/hombros-gigantes-estudiar-proteinas-para-prevenir-enfermedades-cardiacas-30-07-2014/2638179/	2014