

INÉS MARTÍNEZ MARTÍN

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PROFILE

Interested in basic research, particularly in **Molecular Biophysics** and **Mechanobiology**. I have a Master's degree in Biophysics, and a Bachelor's degree in Biochemistry and Molecular Biology. I also have research experience in the fields of Biochemistry, Molecular Biology and Biophysics, including techniques of Cryo-Electron Microscopy, Force Spectroscopy, Proteomics, and MonteCarlo simulations of the mechanical properties of proteins.

EDUCATION

PHD PROGRAM IN BIOCHEMISTRY, MOLECULAR BIOLOGY AND BIOMEDICINE 2020 - 2024

Universidad Complutense de Madrid (Madrid, Spain)

- Thesis directors: Jorge Alegre-Cebollada, Elías Herrero-Galán

M.SC IN PHYSICS OF CONDENSED MATTER AND BIOLOGICAL SYSTEMS 2018 - 2019

Universidad Autónoma de Madrid (Madrid, Spain) | Biophysics specialization

- Grade point average: 9.32 out of 10 (Ranked 3rd of 29 scholars).
- Best grade (*Matrícula de honor* in the Master Thesis).

B.SC IN BIOCHEMISTRY 2014 - 2018

Universidad Autónoma de Madrid (Madrid, Spain)

- Grade point average: 9.35 out of 10 (Ranked 4th of 83 scholars).
- One semester exchange in Boston University (Boston, United States)

INTERNATIONAL BACCALAUREATE (IB) DIPLOMA 2012 - 2014

IES Ramiro de Maeztu (Madrid, Spain)

- Score: 39 out of 45.

RESEARCH EXPERIENCE

SPANISH NATIONAL CENTER FOR CARDIOVASCULAR RESEARCH, CNIC (MADRID, SPAIN) 2019 -

Group leader: Jorge Alegre-Cebollada, PhD

- Project: Titin oxidation in perinatal development
- Main techniques: Proteomics, single-molecule atomic force spectroscopy, protein expression and purification.

EUROPEAN MOLECULAR BIOLOGY LABORATORY, EMBL (HAMBURG, GERMANY) Jan-Jul 2020

Group leader: Matthias Wilmanns, PhD

- Project: High resolution structure of titin I21 domain (6-month short stay).
- Main techniques: Protein expression and purification, protein crystallization, X-Ray crystallography, data processing and interpretation.

SPANISH NATIONAL CENTER FOR CARDIOVASCULAR RESEARCH, CNIC (MADRID, SPAIN) 2018 - 2019

Group leader: Jorge Alegre-Cebollada, PhD

- Project: Oxidative posttranslational modifications as regulators of the mechanical properties of sarcomeric proteins.
- Main techniques: Protein expression and purification, proteomics data analysis, MonteCarlo simulations of protein mechanical properties.

VIENNA BIOCENTER - INSTITUTE OF MOLECULAR PATHOLOGY (VIENNA, AUSTRIA) Jun - Ago 2018

Group leader: David Haselbach, PhD

- Project: Role of Rpt coiled-coil regions in the molecular mechanism of the 26S proteasome.
- Main techniques: Negative stain electron microscopy, cryo-electron microscopy, electron microscopy data processing, protein purification, activity assays, fluorescence anisotropy.

PUBLICATIONS

*#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., Careaga, C. B., Abdellatif, M., Sedej, S., Rainer, P. P., Giganti, D., Pérez-Jiménez, R., Vázquez, J., #Alegre-Cebollada, J. (2022). Basal oxidation of conserved cysteines modulates cardiac titin stiffness and dynamics. *Redox Biology*, 52, 102306.

**Co-first authors, #Co-corresponding authors*

Herrero-Galan E, Dominguez, F, **Martinez-Martin I**, Vicente N, Sanchez-Gonzalez C, Velazquez-Carreras D, Bonzon-Kulichenko E, Calvo E, Vazquez J, Garcia-Pavia P, Alegre-Cebollada J. Conserved cysteines in titin sustain the mechanical function of cardiomyocytes. *bioRxiv* (2020)

Herrero-Galan E, **Martinez-Martin I**, Alegre-Cebollada J. (2018) Redox regulation of protein nanomechanics in health and disease: lessons from titin. *Redox Biology* ; 21:101074.

PARTICIPATION IN CONFERENCES

Oral presentations

Ines Martinez-Martin, Audrey Crousilles, Elias Herrero-Galan, Diana Velazquez-Carreras, Simon A. Mortensen, Pablo Garcia-Pavia, Jorge Alegre-Cebollada, Matthias Wilmanns. Crystallographic structures of titin immunoglobulin-like I21 domains involved in dilated cardiomyopathy. 7th International Iberian Biophysics Conference. Coimbra, Portugal, Online Meeting (**June 2021**).

Poster presentations

Ines Martinez-Martin, Audrey Crousilles, Elias Herrero-Galan, Diana Velazquez-Carreras, Simon A. Mortensen, Pablo Garcia-Pavia, Jorge Alegre-Cebollada, Matthias Wilmanns. Crystallographic structures of titin immunoglobulin-like I21 domains involved in dilated cardiomyopathy. Virtual European Muscle Conference, Poland (Online) (**Sep 2021**).

Ines Martinez-Martin, Audrey Crousilles, Elias Herrero-Galan, Diana Velazquez-Carreras, Simon A. Mortensen, Pablo Garcia-Pavia, Jorge Alegre-Cebollada, Matthias Wilmanns. Crystallographic structures of titin immunoglobulin-like I21 domains involved in dilated cardiomyopathy. 65th Biophysical Society Annual Meeting, Boston, Online Meeting (**Feb 2021**).

Ines Martinez-Martin, Elias Herrero-Galan, Natalia Vicente, Cristina Sanchez-Gonzalez, Diana Velazquez Carreras, Elena Bonzon-Kulichenko, Enrique Calvo, Jesus Vazquez, Jorge Alegre-Cebollada. In vivo titin oxidation as a modulator of sarcomeric contractibility. Poster presentation at Basic Cardiovascular Sciences Scientific Sessions, Boston, USA (**July 2019**).

Elias Herrero-Galan, **Ines Martinez-Martin**, Natalia Vicente, Cristina Sanchez-Gonzalez, Diana Velazquez Carreras, Elena Bonzon-Kulichenko, Enrique Calvo, Jesus Vazquez, Jorge Alegre-Cebollada. In vivo titin oxidation as a regulator of muscle elasticity. Poster presentation at 42nd Congress of the SEBBM, Madrid, Spain (**July 2019**).

Elias Herrero-Galan, **Ines Martinez-Martin**, Natalia Vicente, Cristina Sanchez-Gonzalez, Diana Velazquez Carreras, Elena Bonzon-Kulichenko, Enrique Calvo, Jesus Vazquez, Jorge Alegre-Cebollada. In vivo titin oxidation as a regulator of muscle elasticity. Poster presentation at 12th European Biophysics Congress, Madrid, Spain (**July 2019**).

Susanne Kandolf, Irina Grishkovskaya, Katarina Belačić, **Ines Martinez-Martin**, David Haselbach. Cryo-EM analysis of the spinach 26S proteasome reveals a potential peptide release mechanism. Poster presentation at Institute of Molecular Pathology Symposium 2018, Vienna, Austria (**Oct 2018**).

COMPETITIVE FELLOWSHIPS AND AWARDS

- Biophysical Society Annual Meeting Student Research Achievement Award

- PhD fellowship INPhINIT Retaining from “la Caixa” Foundation. 2020
- NanoGUNE Winter school fellowship. 2019
- CNIC-ACCIONA master fellowship. 2018
- Vienna Biocenter Summer School scholarship 2018
- CNIC-Cicerone research scholarship. 2017
- Merit-based scholarship: “Excellence Scholarship”. 2017 & 2014
- Scholarship UAM-Boston University. 2016

SERVICE AND OUTREACH

- *Ad hoc* reviewer of scientific journals: LWT Food and Science Technology, PNAS.
- Student representative at CNIC’s predoctoral office 2021-2022
- Organizing committee of CNIC PhDay. 2021 & 2019
- Volunteer in *XIX Semana de la Ciencia y la Innovación* at CNIC. 2019
- Volunteer in Joint 12th EBSA 10th ICBP-IUPAP Biophysics Congress. 2019
- Organizing committee and speaker in orientation sessions for high school students. 2017

ADDITIONAL SKILLS

LANGUAGES Spanish (native) | English (C1)

PROGRAMMING LANGUAGES *Experienced:* Python | Igor Pro *Familiar:* R | Matlab

ANIMAL EXPERIMENTATION Functions (RD 53/2013): A - Care | B - Euthanasia | C - Procedures