

Part A. PERSONAL INFORMATION		CV date		12/04/21
First and Family name	Rául Pérez Jiménez			
Social Security, Passport, ID number	74639889J	Age	44	
Researcher codes	WoS Researcher ID (*)	C-3085-2017		
	SCOPUS Author ID(*)			
	Open Researcher and Contributor ID (ORCID) **	0000-0001-7094-6799		

(*) At least one of these is mandatory

(**) Mandatory

A.1. Current position

Name of University/Institution	CIC nanoGUNE		
Department			
Address and Country	Tolosa Avenue, 76 San Sebastian 20018, Spain		
Phone number	943574009	943574009	943574009
Current position	Ikerbasque Research Professor	From	01/02/2013
Key words			

A.2. Education

PhD	University	Year
Licenciatura en Químicas	Universidad de Granada	2000
PhD	Universidad de Granada	2005

A.3. JCR articles, h Index, thesis supervised

Total number of publications: 44

Publications in JCR articles: 44

Book chapters: 2

Review Articles: 4

Number of Citations: 2500 as of end of 2020

H-index: 21

Thesis Supervised: 6 (PhD), 3 (Master)

Part B. CV SUMMARY (max. 3500 characters, including spaces)

I obtained my PhD from the University of Granada in 2005 under the direction of Jose Manuel Sanchez Ruiz. After graduating, I joined the Department of Biological Sciences at Columbia University in New York as a postdoctoral researcher in the laboratory of Professor Julio Fernandez. There, I was involved in the new development of methodologies to investigate enzymatic reactions at the single-molecule level using Atomic Force Microscopy (AFM). In 2010, I was appointed Research Scientist developing new research lines that combined AFM techniques with ancestral sequence reconstruction techniques to investigate the mechanochemistry of ancient proteins. In 2013, I was awarded an Ikerbasque Research Professor position and joined CIC nanoGUNE in San Sebastian as group leader of the Nanobiomechanics laboratory. I have published research articles in the most prestigious journals including several journals from the *Nature family*, *ACS*, *Science* and *PNAS*. My current research lines focus on the study of the mechanochemistry of proteins related to human diseases such as viral and bacterial infections. In my lab I have also developed a research line focused on the improvement and design of enzymes for industrial biotechnological applications.

Part C. RELEVANT MERITS

C.1. Publications (most relevant)



1. Alonso-Lerma B, Barandiaran L, Larraza I, Ugarte L, Barruetabeña N, Amenabar I, Hillenbrand R, Eceiza A & **Perez-Jimenez R**. High Performance Crystalline Nanocellulose Using an Ancestral Endoglucanase (2020). **Communications Materials**, (2020) 1:57.
2. Barruetabeña N, Alonso-Lerma B, Galera-Prat A, Joudeh N, Barandiaran L, Aldazabal L, Arbulu M, Alcalde M, De Sancho D, Gavira JA, Carrion-Vazquez M & **Perez-Jimenez R**. Resurrection of efficient Precambrian endoglucanases for lignocellulosic biomass hydrolysis (2019). **Communications Chemistry** (2019) 2:76
3. De Sancho D, Schönfelder J, Best RB, **Perez-Jimenez R**, Muñoz V. Instrumental Effects in the Dynamics of an Ultrafast Folding Protein under Mechanical Force (2018). **J Phys Chem B**. 13;122(49):11147-11154
4. Schönfelder J, De Sancho D, Berkovich R, Best RB, Muñoz V & **Perez-Jimenez R**. Reversible two-state dynamics of an ultrafast folding protein under mechanical force (2018), **Communications Chemistry** (2018) 1:59.
5. Alonso-Caballero A, Schönfelder J, Poly S, Corsetti F, De Sancho D, Artacho E & **Perez-Jimenez R**. Mechanical architecture and folding of E coli type-1 pilus domains (2018). **Nature Comm**, 9:2758.
6. Schönfelder J, De Sancho D & **Perez-Jimenez R**. The life of proteins under force (2018). **Chem Soc Rev**. doi: 10.1039/c7cs00820a.
7. Manteca A, Schönfelder J, Alonso-Caballero A, Faria BF, Herrero-Galán E Alegre-Cebollada J, De Sancho D, **Perez-Jimenez R**. Mechanochemical evolution of the giant muscle protein titin as inferred from resurrected proteins (2017). **Nature Struc Mol Biol**. DOI: 10.1038/3426. Article highlighted in the cover of the journal and in general media.
8. Manteca A, Alonso-Caballero A, Poly S, De Sancho D, **Perez-Jimenez R**. The influence of disulfide bonds in the mechanical stability of proteins is context dependent (2017). **J Biol Chem** DOI: 10.1074/jbc.M117.784934.
9. Schönfelder J, De Sancho D, **Perez-Jimenez R**. The power of force: Insights into the protein folding process using single-molecule force spectroscopy (2016). **J Mol Biol**, 428(21):4245-4257.
10. Schönfelder J, **Perez-Jimenez R***, Muñoz V. *Corresponding author. **Nature Comms** 2016, 7, 11777. "A Simple Two-State Protein Unfolds Mechanically via Multiple Heterogeneous Pathways at Single-Molecule Resolution."
11. Kahn TB, Fernandez JM, **Perez-Jimenez R**. Monitoring oxidative folding of a single protein catalyzed by the disulfide oxidoreductase DsbA (2015). **J Biol Chem**, 290(23):14518-27.
12. **Perez-Jimenez R***, Alonso-Caballero A, Ronen Berkovich R, Franco D, Chen M-W, Richard P, Badilla C-L, and Fernandez JM. Probing the effect of force on HIV-1 receptor CD4 (2014). *Corresponding author. **ACS Nano**, 8(10): 10313-10320. Highlighted on *Chemical & Engineering News*.
13. Inglés-Prieto A, Ibarra-Molero B, Delgado-Delgado A, **Perez-Jimenez R**, Fernandez J , Gaucher EA , Sanchez-Ruiz JM , Gavira, JA. Conservation of Protein Structure over Four Billion Years (2013). **Structure**, S0969-2126(13)00244. doi: 10.1016/j.str.2013.06.020.
14. Javadi Y, Fernandez J, **Perez-Jimenez R**. Protein folding under mechanical forces: A physiological view (2013). **Physiology**, 28(1): 9-17.
15. **Perez-Jimenez R** and Alegre-Cebollada J. Enzyme catalysis at the single-molecule level. *Single-molecule studies of proteins*. Biophysics for Life Sciences Volume 2, 2013, pp 149-168 Edited by Andres Oberhauser. Springer Science LLC,
16. Naganathan AN, **Perez-Jimenez R**, Muñoz V, Sanchez-Ruiz JM. Estimation of protein folding free energy barriers from calorimetric data by multi-model bayesian analysis (2011). **Phys Chem Chem Phys**, 13, 17064-17076.
17. **Perez-Jimenez R***, Inglés-Prieto A, Zhao ZM, Sanchez-Romero I, Alegre-Cebollada J, Kosuri P, Garcia-Manyes S, Holmgren A, Kappock T J, Tanokura M, Sanchez-Ruiz JM, Gaucher EA, and Fernandez JM*. Single-molecule paleoenzymology probes the chemistry of resurrected enzymes (2011). *Corresp author. **Nature Struct Mol Biol**, 18(5):592-9.



18. Naganathan AN, Li P, **Perez-Jimenez R**, Sanchez-Ruiz JM and Muñoz V. Navigating the downhill protein folding regime via structural homologues (2010). *J Am Chem Soc*, **132(32):11183-90**.
19. Rodriguez-Larrea D, **Perez-Jimenez R**, Sanchez-Romero I, Delgado-Delgado A, Fernandez JM, Sanchez-Ruiz JM. Role of conservative mutations in protein multi-property adaptation (2010). *Biochem J*, 429(2):243-9.
20. Alegre-Cebollada J, **Perez-Jimenez R**, Kosuri P, and Fernandez JM. Single-molecule force spectroscopy approach to enzymatic catalysis (2010). *J Biol Chem*, 285(25):18961-6.
21. **Perez-Jimenez R***, Li J, Kosuri P, Sanchez-Romero I, Wiita AP, Rodriguez-Larrea D, Chueca A, Holmgren A, Miranda-Vizueté A, Becker K, Cho SH, Beckwith J, Gelhaye E, Jacquot JP, Gaucher EA, Sanchez-Ruiz JM, Berne BJ, Fernandez JM*. Diversity of chemical mechanisms in thioredoxin catalysis revealed by single-molecule force spectroscopy (2009). *Corresponding author. *Nature Struct Mol Biol*, 16(8):890-6
22. Sadqi M, de Alba E, **Perez-Jimenez R**, Sanchez Ruiz JM, and Munoz V. A designed protein as experimental model of primordial folding (2009). *Proc Natl Acad Sci U S A*, 106(11):4127-32.
23. del Rio A, **Perez-Jimenez R**, Liu R, Roca-Cusachs P, Fernandez JM and Sheetz MP. Stretching single talin rod molecules activates vinculin binding (2009). *Science*, 323(5914):638-41.

C.2. Research projects and grants

Jan. 2017: Spanish National Program for R&D: Retos de la Sociedad 2016. Title: Control de la nanomecánica de infecciones víricas y bacterianas: desde moléculas a células. BIO2016-77390-R.

Jan 2016: Elkartek program from the Basque Government basic collaborative research.

Sep. 2015: Europa Excelencia. Project awarded to ERC candidates given the maximum qualification "A" but with no funding

July. 2014: Spanish national program for R&D: Retos de la Sociedad 2013. Title: Nanomecánica de proteínas implicadas en infecciones microbianas. BIO2013-4.

Dec. 2013: Marie Curie Career Integration Grants (CIG) FP7-PEOPLE-2013-CIG. Title: Nanomechanics of proteins involved in viral and bacterial infections, "InfeMec".

C.3. Patents

1. Title of invention: "Statistical Method to Alter and Optimize Enzymes: Paleoenzymology." Lead Inventors: Julio M. Fernandez, **Raul Perez-Jimenez**, Pallav Kosuri, and Eric Gaucher. U.S. Provisional Patent Application No. 61/364, 640.
2. Title of Invention: "Force-Clamp Spectrometer and Methods of Use". Lead Inventors: Julio M. Fernandez, **Raul Perez-Jimenez**, Pallav Kosuri. U.S. Patent No. 61/364, 208.
3. Title of invention: "Endocellulases and Uses Thereof". Lead Inventors: **Raul Perez-Jimenez**. Provisional Patent Application No. EP16382018.6
4. Title of invention: "Ancestral cellulases and secretion organisms and uses thereof". Lead Inventors: **Raul Perez-Jimenez**, Nerea Barruetabeña, Arantxa Eceiza. Filled EP17382862.5.

C.4. Prizes and awards

Mar 2016: Enrique Perez-Paya from the Spanish Buiphiscla Society to Young Researcher under 40.

July. 2014: Repsol Entrepreneurs Fund. Innovative Idea Award "Evolgene"

Dec. 2011: Columbia Technology Ventures Seed Fund Award

June 2011: Ramon y Cajal Program for Incorporation of Human Resources. Spanish Ministry of Education and Science. Position 4th. Declined.

Feb. 2010: Postdoctoral Excellence in Investigation Award from Fundación Ibercaja, Spain.

June 2009: Postdoctoral Fellowship from Fundación Caja Madrid, Spain.



C.5. Memberships

Member of the Biophysical Society since 2006
Member of the Spanish Biophysical Society since 2015

C.6. Invited Seminars and talks

- Columbia University, Department of Physics, New York, USA.
- Centro Nacional de Investigaciones Biológicas, CSIC, Madrid, Spain.
- Genencor-Dupont, California, USA.
- Swiss Federal Institute of Technology (ETH), Department of Bioengineering, Basel, Switzerland.
- Gordon Research Conference on Enzymes, Coenzymes and Metabolic Pathways
- University College London, Department of Chemistry, London, UK.
- University of Oxford, Department of Chemistry, Oxford, UK.
- Georgia Institute of Technology, Department of Chemistry, Atlanta, USA.
- King's College London, Randall Division Cellular and Molecular Biophysics, London, UK.
- Institute of Bioengineering of Catalonia (IBEC), Barcelona, Spain.
- Imperial College, Department of Bioengineering, London, UK
- Gordon Research Conferences
- Biophysical Society

C.7. Reviewer activities

- Reviewer of scientific publications for Springer Nature Publishing group, Elsevier journals, American Chemical Society journals, and other publishing groups.
- Reviewer of grant proposals from European Research Council (ERC), Spanish National Program for R&D, Austrian Science Fund (FWF), The Netherlands Organisation for Scientific Research (NOW), and other institutions.