Curriculum Vitae

JULIO M. FERNANDEZ, Ph.D.

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Education:

1972-1977	Physics - Licenciate in Physics, University of Chile, Physics Department
1977-1982	Physiology - Ph.D.- University of California, Los Angeles, School of Medicine, Department of Physiology

Postgraduate Training and Fellowship Appointments:

1982-1983	Postdoctoral Research Fellow, University of California, Los Angeles
1983-1986	Postdoctoral Research Fellow, Max Planck Institut fuer Biophysikalische Chemie., Department of Membrane Biophysics, Goettingen, Germany

Faculty Appointments:

1987 - 1989	Assistant Professor, Department of Physiology, School of Medicine, University of Pennsylvania, Philadelphia, PA 19104
1989 - 2002	Associate Professor, Professor (1994) and Consultant, Department of Physiology and Biophysics, Mayo Foundation, Rochester, MN 55905
2002 – Present	Professor, Department of Biological Sciences, Columbia University, New York, NY 10027

Other Professional Experience:

1994-1995	Co-Founder of Tacora Corporation, Chairman of the Scientific Advisory Committee.
1997-1998	Founder of the Biomedical Engineering Graduate Program at the Mayo Graduate School
1997-2000	Chairman, Department of Physiology and Biophysics, Mayo Foundation, Rochester, MN 55905
2002	Co-Organizer, German-American Frontier of Sciences meeting.
2002-2004	Member of the Technical Advisory Board at VEECO Digital Instruments Corporation
2003–2006	Chairman, NIH BBCB/MSFC Study Section
2012	Chair, Gordon Research Conference in "Single Molecule Approaches to Biology".

Grant Awards (current):

07/99 - 6/2013	"Molecular Basis of Titin Elasticity," NIH RO1 HL61228
1/01 - 4/2014	"Micromechanics of the Extracellular Matrix," NIH R01 HL66030

Past:

04/96- 03/2000	"Regulation of Exocytotic Release by Smart Hydrogels," NIH RO1 -GM 46688
09/96 - 08/2000	"Molecular Architecture of an Active Zone of Exocytosis," NIH 5R01 NS 35866
07/87 - 06/98	"Stimulus Secretion Coupling in Mast Cells," NIH R29 (1987-92), RO1 (1992-98)- GM 38857
02/92 - 02/96	"Structure of the Exocytotic Fusion Pore in Mast Cells," NIH R01 GM 46688
07/89- 06/94	"Mechanisms of Secretory Granule Formation and Secretion," Established Investigatorship from the American Heart Association
07/88 - 06/91	"Tomographic Reconstruction of Secretory Granules in Living Cells," The Whitaker Foundation

Awards and Honors:

1977	Graduated with highest distinction
1981	Phi Beta Kappa Award
1981	Grass Foundation Fellowship
1982	American Heart Association Fellowship
1983-1985	Alexander von Humboldt Fellowship
1985-1986	Max-Planck Fellowship
1989-1994	Established Investigator of the American Heart Association
1995	Boehringer Ingelheim Lecture, University of Mainz
1996	Alexander von Humboldt Senior US scientist award
2001	Fellow of the American Heart Association
2002-2005	Council Member of the Biophysical Society
2005	Woodward Lecture, Harvard-MIT Physical Chemistry
2009	Sackler Scholar, Tel Aviv University
2009	U.S. Genomics Award for Outstanding Investigator in the field of Single Molecule Biology, Biophysical society.

Memberships in Professional and Scientific Societies:

Biophysical Society
American Heart Association
American Chemical Society
Alexander von Humboldt Association of America

Peer Review Committees:

1992-1993	National Science Foundation, Cell Biology Panel, member
1994-1996	National Institutes of Health, Cellular Biology Study Section CBY-1, member
2001-2003	Advisory Committee of the Volkswagen Stiftung, Hannover, Germany, member
2003-2006	Chairman, National Institutes of Health, Biophysical Chemistry BBCB/MSFC Study Section.
2006-2012	Reviewer for the German Excellence Initiative of the DFG.
2007	Chairman, National Institutes of Health, ZRG1 BCMBB Special Study Section.
2004-2011	Burroughs Wellcome Fund advisory committee on Career Awards at the Scientific Interface, member

Invited speaker at Meetings and Special Lectures (selected):

March 18-21, 2011	USA-Mexico Workshop in Biological Chemistry, Mexico City
September 20-30, 2010	Workshop on single molecule protein mechanics, Bilbao, Spain
September 4-9, 2010	Gordon Research Conference, Les Diablerets, Switzerland
August 22-25, 2010	Frontiers of condensed phase theory and simulation, ACS, Boston

July 26-27, 2010	Keynote speaker at Midwest Single Molecule Meeting, St Luis.
June 27-July 2, 2010	Gordon Research Conference, Co-Chair, Il Ciocco, Italy
April 9-11, 2010	2010 Chemical Biophysics Symposium, Toronto, Canada.
Nov 16-18, 2009	France-US Nanoscience Workshop, Paris, France
November 7-9, 2009	Workshop in "Frontiers in Biophysics", Bilbao, Spain.
July 8-10, 2009	Fragrant Hill (Xiangshan) Science Conference on "Single-Molecule Imaging, Spectroscopy, Manipulation of Biological Systems", Beijing, China.
June 1-6, 2008	Nobel Symposium on Single Molecule Spectroscopy in Chemistry, Physics and Biology, Stockholm, Sweden
May 26-30,2008	International Workshop on Nanostructured Bio-Interfaces, Portoroz, Slovenia
November 19-30, 2007	African Regional College on Science at the Nanoscale, Cape Town, South Africa
July 3-6, 2007	XXIII Bienal de la Sociedad de Microscopia Española, Bilbao, Spain
July 1-5, 2007	12th international conference on Organized Molecular Films, Krakow, Poland.
June 7, 2007	Symposium in Chemical Physics on Chemistry and Physics of Bio-Nano Systems, Tel Aviv, Israel
May 31-June2, 2007	Meeting on "Molecular Cell Dynamics" at the University of Muenster, Germany
May 2-4, 2007	Latin- American Symposium on Scanning Probe Microscopy- IV LASPM, Buenos Aires, Argentina.
November 1-3, 2006	2006 Carolina Biophysics Symposium, University of North Carolina, Chapel Hill, NC.
September 26-29, 2006	CECAM, Theory of single molecule force experiments and stimulations, Lyon, France.
September 22, 2006	"Biomolecular Regulation", Nobel Institute for Chemistry. Royal Swedish Academy of Sciences (KVA), Stockholm, Sweden.
August 14-25, 2006	Asian/Pacific Regional College on "Science at the Nanoscale",

	International Centre for Theoretical Physics, Beijing, P.R. China.
July 30-August 6, 2006	ICN+T 2006 International Conference on Nanoscience and Technology, Basel, Switzerland.
June 18-23, 2006	Gordon Conference on Single Molecule Approaches to Biology, New London, NH.
May 13-17, 2006	Biophysical Chemistry Symposium, McGill University, Montreal, QC, Canada.
January 15-20, 2006	Gordon Research Conference (GRC), Ventura, CA.
October 18-19, 2005	I Symposium on Single-Molecule Protein Mechanics at the Cajal Institute, Madrid, Spain.
July 2-7, 2005	FEBS Congress and IUBMB Conference, Budapest, Hungary.
May 28- June 4, 2005	International Centre for Theoretical Physics, Trieste, Italy.
April 21, 2005	"Single Molecules Symposium" at the University of Pennsylvania
April 10-14, 2005	"Physics in Biology Symposium": A Century after Einstein, Institute of Physics, University of Warwick, England
February 12-16, 2005	"Advances in Single-Molecule and Single-Cell Detection and Manipulation" Biophysical Society 2005 Annual Meeting, Long Beach, CA
February 3, 2005	Woodward Lecture Series in the Chemical Sciences, Harvard-MIT Physical Chemistry, Boston, MA
August 22-26, 2004	Biophysical Chemistry and Novel Imaging of Single Molecules and Single Cells, American Chemical Society, Philadelphia, PA
May 24-28, 2004	Spring College on Science at the Nanoscale. Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy
March 15-19, 2004	Protein Folding Week, Statistical Mechanics of Molecular and Cellular Biological Systems at the Isaac Newton Institute for Mathematical Sciences, Cambridge, England

January 6-9, 2004	International Workshop on Single Molecule Biophysics, National Center for Biological Sciences, Bangalore, India
September 18-19, 2003	NELSI Research Symposium, Leeds University, England
August 11-15, 2003	The Abdus Salam International Center for Theoretical Physics, Trieste, Italy
February 24-28, 2003	Current Issues of Nano-Bio-Science, CeNS Winterschool 2003, Mauterndorf, Austria
February 12-14, 2003	Physical Society of the Republic of China (PSROC) Annual Meeting, Hualien, Taiwan
November 2-4, 2002	Japanese Biophysical Society Symposium, Nagoya, Japan
June 6-8, 2002	Member of the Organizing Committee, German-American Frontiers of Science Symposium (GAFOS). National Academy of Sciences conference center in Irvine, California
May 12-17, 2002	First International Conference and School on Nanoscale and Molecular Mechanics, Maui, Hawaii
January 5-10, 2002	Mathematics and Molecular Biology VII, PMMB, Santa Fe, NM.
November 19-20, 2001	Opening of the "Zentrum für Multifunktionelle Werkstoffe und Miniaturisierte Funktionseinheiten" at the Max-Plank-Institut für Polymerforschung, Mainz, Germany
June 7-10, 2001	7th Annual German-American Frontiers of Science Symposium Bad-Homburg, Germany
March 5-7, 2001	Second Symposium of the Schwerpunktprogramm, "Physics, Chemistry and Biology with Single Molecules," Kloster Banz, Staffelstein, Germany
December 14-16, 2000	2000 US-Swiss Forum on NanoBioSciences, Princeton University, Princeton, NJ
July 24-26, 2000	Force Transduction in Biology Workshop, National Science Foundation. Washington, DC
July 12-15, 2000	"Micro-Nano-Bio: Common Methods and Mechanisms in Materials and BioSciences" Max Planck Society, Schloss Ringberg , Bavaria, Germany

June 25-26, 2000	"Nanoscience and Nanotechnology: Shaping Biomedical Research," National Institute of Health, Bioengineering Consortium Symposium, Bethesda, MD
June 8-10, 2000	6th Annual German-American Frontiers of Science Symposium, Irvine, CA

BIBLIOGRAPHY:

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Fernandez, J.M., Taylor, R.E. and Bezanilla, F. (1983). Induced capacitance in the squid giant axon. Lipophilic ion displacement currents. J. Gen. Physiol. 82:331-346.

Fernandez, J.M., Fox, A. and Krasne, S. (1984). Membrane patches and whole-cell membranes: A comparison of electrical properties in rat clonal pituitary (GH3) cells. J. of Physiol. 356:565-585.

Schroeder, J.I., Hedrich, R. and Fernandez, J.M. (1984). Potassium-selective single channels in guard cell protoplast of Vicia faba. Nature 312:361-362.

Fernandez, J.M., Neher, E. and Gomperts, B.D. (1984). Capacitance measurements reveal stepwise fusion events in degranulating mast cells. Nature 312:453-455.

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Fernandez, J.M., Lindau, M. and Eckstein, F. (1987). Intracellular stimulation of mast cells with guanine nucleotides mimic antigenic stimulation. FEBS Lett. 216:89-93.

Hedrich, R., Schroeder, J.I. and Fernandez, J.M. (1987). Patch-clamp studies on higher plant cells: a perspective. TIBS 12:49-52.

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Rief, M., Fernandez, J.M., and Gaub, H.E. (1998). Elastically coupled two-level systems as a model for biopolymer extensibility. Phys. Rev. Lett., 81:4764-4767.

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Gaub, H.E., and Fernandez, J.M. (1998). The molecular elasticity of individual proteins studied by AFM-related techniques. AvH-Magazin, 71:11-18.

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Carrion-Vazquez, M., Marszalek, P.E., Oberhauser, A.F., and Fernandez, J.M. (1999). Atomic force microscopy captures length phenotypes in single proteins. Proc. Natl. Acad. Sci. USA 96:11288-11292.

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Marszalek, P.E., Greenleaf, W.J., Li, H., Oberhauser, A.F., and Fernandez, J.M. (2000) Atomic force microscopy captures quantized plastic deformation in gold nanowires. Proc. Nat'l. Acad. Sci., 97:6282-6286.

Li, H., Oberhauser, A.F., Fowler, S.B., Clarke, J., and Fernandez, J.M. (2000) Atomic force microscopy reveals the mechanical design of a modular protein. Proc. Nat'l. Acad. Sci., 97:6527-6531.

Fisher T. E., Carrion-Vazquez, M., Oberhauser, A.F., Hongbin Li, Marszalek, P.E., & Fernandez, J.M. (2000). Single molecule force spectroscopy of modular proteins in the nervous system. Neuron, 27(3):435-446.

Fisher T. E., Marszalek, P.E., and Fernandez, J.M. (2000). Stretching single molecules into novel conformations using the atomic force microscope. Nature Struct. Biol., 7(9) 719-724.

Fisher T. E., Carrion-Vazquez, M and Fernandez, J.M. (2000). Intracellular Ca^{++} channel immunoreactivity in neuroendocrine axon terminals. FEBS letters 24153:1-8.

Li, H., Carrion-Vazquez, M., Oberhauser, A.F., Marszalek, P.E. and Fernandez, J.M. (2000) Point mutations alter the mechanical stability of immunoglobulin modules. Nature Struct. Biol., 7(12):1117-1120

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Ave Minajeva, Marc Ivemeyer, Julio M. Fernandez & Wolfgang A. Linke (2001) Unfolding of titin domains explains the viscoelastic behavior of skeletal myofibrils. Biophys. J., 2001 Mar;80(3):1442-1451.

Oberhauser, A.F., Hansma, P.K., Carrion-Vazquez, M., and Fernandez, J.M. (2001). Stepwise unfolding of titin under force-clamp AFM. Proc. Nat'l. Acad. Sci., 98:468-472.

Marszalek, P.E., Li, H., & Fernandez, J.M., (2001) Fingerprinting polysaccharides with single molecule atomic force microscopy, Nature Biotechnology, 19:258-262

Fernandez, J.M., Chu, S. and A.F. Oberhauser, (2001) Pulling on hairpins (perspective), Science, 292:653-654

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Linke, W. and J.M. Fernandez (2002) Cardiac titin: molecular basis of elasticity and cellular contribution to elastic and viscous stiffness components in myocardium. J. of Muscle Research and Cell motility 23:483-497

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