

**Curriculum Vitae**

**JULIO M. FERNANDEZ, Ph.D.**

**Office Address:**

Department of Biological Sciences  
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Columbia University  
1212 Amsterdam Avenue  
New York, NY 10027

**Education:**

- 1972-1977                      Physics - Licenciata 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

**Grant Awards (current):**

07/99 - 6/2008 "Molecular Basis of Titin Elasticity," NIH RO1 HL61228

1/01 - 12/2009 "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

### **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.
2004-Present	Burroughs Wellcome Fund advisory committee on Career Awards at the Scientific Interface, member
2006	Reviewer for the German Excellence Initiative of the DFG.

### **Invited speaker at Meetings and Special Lectures (selected):**

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 4-7, 2002	6 <sup>th</sup> Annual Membrane Research Forum, Nagoya, Japan
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
April 7-11, 2002	National Meeting and Exposition Program of the American Chemical Society, Orlando, FL
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-Planck-Institut für Polymerforschung, Mainz, Germany
September 4-7, 2001	15th Annual Meeting of the Chilean Society for Cell Biology, Valdivia, Chile
July 28-August 1, 2001	15th Symposium of the Protein Society, Philadelphia, PA

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
January 14-20, 2001	Winter workshop on Single Molecule Biophysics. Aspen Center for Physics, Aspen, CO
December 14-16, 2000	2000 US-Swiss Forum on NanoBioSciences, Princeton University, Princeton, NJ
October 19-21, 2000	Third Triangle Biophysics Symposium, UNC and Duke University, Durham, NC
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
April 17-18, 2000	Single Molecule Detection and Manipulation Workshop, National Institute of Health, Bethesda, MD
March 20-24, 2000	The American Physical Society, Minneapolis, MN

**Invited Seminars to Universities and Research Institutes (selected):**

Princeton University  
Massachusetts Institute of Technology  
Johns Hopkins Medical School  
University of Chicago  
Max Planck Institute, Goettingen, Germany  
Max Planck Institute, Heidelberg, Germany  
University of Frankfurt, Frankfurt, Germany  
EMBL, European Molecular Biology Institute  
Institute of Zoology, Munich, Germany  
Anatomisches Institut der Technischen Universitat, Munich  
Boston University  
Biochemisches Institut, Universitaet Zurich, Switzerland  
Cambridge University, England  
University of Illinois, Urbana-Champaign  
University of Barcelona, Barcelona, Spain  
Ecole Normale Superieure, Paris, France  
Ludwig-Maximilians-Universitat Munich, Germany  
University of California, Berkeley  
University of California, Santa Barbara  
University of California, San Diego  
University of California, Irvine  
University of California, Los Angeles  
University of Texas, Galveston  
University of Texas, Southwestern Medical Center, Dallas,  
Cornell University, Ithaca  
Yale University  
Stanford University  
Harvard University  
University of Washington, Seattle  
Washington University, St. Louis  
University of Virginia, Charlottesville  
Vollum Institute  
Freie Universitat, Berlin, Germany  
Iowa State University, Ames  
University of Seville, Spain  
University of Minnesota  
Baylor School of Medicine, Houston  
State University of New York, Stony Brook  
State University of New York, Buffalo  
Mount Sinai School of Medicine  
Columbia University  
Scripps Research Institute  
University of Wisconsin, Madison  
Duke University, Durham  
California Institute of Technology, CA

## **BIBLIOGRAPHY:**

Clausen, C. and Fernandez, J.M. (1981). A low cost method for rapid transfer function measurements with direct application to biological impedance analysis. Pflugers Archiv. 390:290-295.

Taylor, R.E., Fernandez, J.M. and Bezanilla, F. (1981). Squid axon membrane low frequency dielectric properties. In: The Biological Approach to Excitable Membranes. W.J. Adelman, Jr., and D.E. Goldman (Eds.), Plenum, New York, pp. 97-106.

Bezanilla, F., Taylor, R.E. and Fernandez, J.M. (1982). Distribution and kinetics of membrane dielectric polarization. I. Long-term inactivation of gating currents. J. Gen. Physiol. 79:21-40.

Fernandez, J.M., Bezanilla, F. and Taylor, R.E. (1982). Distribution and kinetics of membrane polarization. II. Frequency domain studies of gating currents. J. Gen. Physiol. 79:41-68.

Fernandez, J.M., Bezanilla, F. and Taylor, R.E. (1982). Effect of the chloroform on charge movement in the nerve membrane. Nature 297:150-152.

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.

Gomperts, B.D. and Fernandez, J.M. (1985). Techniques for membrane permeabilization. TIBS 10:414-417.

Neher, E., Fernandez, J.M. and Lindau, M. (1986). The calcium dependence of vesicle exocytosis. In: Molecular Neurobiology in Neurology and Psychiatry Ed., E.R. Kandel, Raven Press, New York, pp. 103-110.

Hedrich, R. Fluegge, U.I. and Fernandez, J.M. (1986). Patch-clamp studies of ion transport in isolated plant vacuoles. FEBS Lett. 3910, 204:228-232.

Lindau, M. and Fernandez, J.M. (1986). A patch-clamp study of histamine secreting cells. J. Gen. Physiol. 88:349-368.

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