CURRICULUM VITAE

José Nelson Onuchic

1. **Address**

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2. **Education**
   - Ph.D. Chemistry, California Institute of Technology, March 1987.
   - M.S. Applied Physics, Universidade de São Paulo, August 1982.
   - B.S. Physics, Universidade de São Paulo, June 1981.
   - B.S. Electrical Engineering, Universidade de São Paulo, December 1980.

3. **Current Positions**
   - Professor of Physics, University of California, San Diego.
   - Co-Director, Center for Theoretical Biological Physics (supported by the NSF).
   - Co-Director, La Jolla Interfaces in Science (supported by the Burroughs Wellcome Fund).
   - Senior Fellow, San Diego Supercomputer Center.

4. **Academic Positions**
   - Professor of Physics, University of California, San Diego (starting July 1st, 1995).
   - Associate Professor of Physics, University of California, San Diego (July 1992 – June 1995).
   - Assistant Professor of Physics, University of California, San Diego (Feb. 1990 – Jun. 1992).
   - Assistant Professor of Physics, Instituto de Física e Química de São Carlos, Universidade de São Paulo (Jul. 1987 – Jan. 1990).

5. **Honors**
   - 2006 Member of the National Academy of Sciences, USA.
   - 2002 Academic Senate Distinguished Teaching Award, UCSD.
   - 1995 Fellow of the American Physical Society.
   - 1992 Beckman Young Investigator.
   - Associate Member of the Academia de Ciências do Estado de São Paulo, 1991.
   - International Centre for Theoretical Physics Prize in Honor of Professor Werner Heisenberg, Trieste, Italy 1988.
   - Engineering Institute Prize, São Paulo, Brazil, 1980.

6. **Research Interests** — Theoretical and computational methods for molecular biophysics and chemical reactions in condensed matter. In protein folding, we introduced the concept of protein folding funnels as a mechanism for the folding of proteins. Convergent kinetic pathways, or folding funnels, guide folding to a unique, stable, native conformation. Energy landscape theory and the funnel concept provide the theoretical framework needed both to pose and to address the questions of protein folding mechanisms.Convergent kinetic pathways, or folding funnels, guide folding to a unique, stable, native conformation. Energy landscape theory and the funnel concept provide the theoretical framework needed both to pose and to address the questions of protein folding and function mechanisms. A second effort of our group focuses on the theory of chemical reactions in condensed matter with emphasis on biological electron transfer reactions. These reactions are central to the bioenergetic pathways of both animals and plants on earth, such as the early steps of photosynthesis. Most of our recent work deals with the electronic coupling between the donor and acceptor sites. The concept of tunneling pathways and the methodology for reducing the protein into a combination of relevant tubes of pathways create a new way of designing electron transfer proteins. The connection between this theoretical approach and experiments on electron transfer proteins has substantially improved our understanding of these electron transfer processes. Currently we are broadening our interests to stochastic effects in genetic networks.

Other Professional Activities

1. National Science Foundation, Molecular Biophysics Panel, 1994-1999.

2. National Science Foundation, Mathematical and Physical Science Division Advisory Committee (MPSAC), 2005-2008.

3. "NSF Workshop in Theoretical Biology," National Science Foundation, Chair, October 2006.

4. National Institutes of Health, BBCB and then MSFB Study Session, 2003-2007.

5. National Academy of Science, Board of Physics and Astronomy, member, 2005-present.

6. International Union of Pure and Applied Physics, Biological Physics Commission (C6), vice president 2002-2005, secretary 2005-2008, president 2008-present.

7. Institute for Complex and Adaptive Matter (ICAM) , Science Steering Committee, member 2000-present, Executive Committee 2008-present.

8. Panel on Public Affairs (POPA), American Physical Society, member, 2009-present.

9. Los Alamos National Laboratory, Theoretical Division Review Committee, member 2002-2007, chair 2003-2005.

10. Lawrence Berkeley Laboratory,Physical Biosciences Division Review Committee, chair 2003-2004.

11. Editorial Board of the Biophysical Journal, Member, 2002-2008.

12. Editorial Board of the Proceedings of the National Academy of Sciences, 2007-present.

13. Editorial Board of the Reports on the Progress of Physics, 2007-present.

14. Editorial Board of the HFSP Journal, 2007-present.

15. Editorial Board of Advances in Chemical Physics, 2007-present.

16. Publication Committee of the Biophysical Society, Member, 2004-2005.

17. Molecular Simulation, Regional Editor, 2002-2005.

18. Research Corporation Foundation, President Advisory Panel in Research, member, 2005-present.

19. NRC-NAS report at the interface of the physical and life sciences, 2007-2008

20. 6^{th} International Conference in Biological Physics, International Union of Pure and Applied Physics, Biological Physics Commission (C6), Montevideo, Uruguay, member of the organizing committee, August 2007

21. NIH-NSF Conference on"Research at the Interface of the Life and Physical Sciences: Bridging the Sciences," November 2004, co-chair.

22. Visiting Professor at IMS, Japan 1998

23. International Centre for Theoretical Physics, Trieste, Italy, Director of the 'College in Biophysics," 1992-1996.

24. Gordon Conference "Protein Folding Dynamics," vice-chair 2002, chair 2004.

25. 22nd Symposium of the Protein Society, July 2008, Academic Liaison.

26. Member of several other panels at Howard Hughes, NAS, NRC, NSF, NIH, and DOE. I have also advised several Brazilian foundations.

27. Referee of tens of scientific journals.

Current Support

1. **The Energy Landscape of Protein Folding and Function: Connecting Theory and Experiments**
   - Agency – National Science Foundation
   - Period Covered 02/01/06–01/31/11

2. **Physics Frontiers Center: Center for Theoretical Biological Physics**
   - Agency – National Science Foundation
   - Period Covered 09/01/02–08/31/09

3. **Physics Frontiers Center: Center for Theoretical Biological Physics**
   - Agency – National Science Foundation
   - Period Covered 09/01/08–08/31/13

4. **Investigation of the Functional/Folding Landscapes of the IL-1 Family**
   Patricia Jennings, PI
   - Agency – National Institutes of Health
   - Period Covered 03/01/07–02/28/11

Selected Invited Presentations

09.3 "Energy Landscape for Protein Folding and Molecular Machines," Center for Bioenergy & Photosynthesis Seminar, Arizona State University, Tempe, AZ, 12 February 2009.

09.2 "The energy landscape for molecular motors - the kinesin story," Mesilla Chemistry Workshop: Multi-Scale Modeling of Biological Molecules, Mesilla, NM, 1-4 February 2009.

09.1 "The energy landscape for folding and molecular motors," Physics Colloquium, Duke University, Durham, NC, 23 January 2009.

08.15 "The energy landscape for folding and molecular motors," International Symposium on the Frontiers of Computational Science 2008 (FCS2008), Nagoya, Japan, 27-29 November 2008.

08.14 "The Energy Landscape for Protein Folding and Biomolecular Motors," Physical Chemistry Seminar, University of Pennsylvania, Philadelphia, PA, 18 September 2008.

08.13 " The energy landscape for folding and molecular motors," Symposium on Multiscale Modeling in Biophysics, Fall 2008 236th ACS National Meeting, Philadelphia, PA, 17-21 August 17-21 2008.

08.12 "The Energy Landscape for Molecular Motors The Kinesin Story," Plenary Session on Protein Motors, The 22nd Symposium of The Protein Society, San Diego, California, 19-23 July 2008.

08.11 "Center for Theoretical Biological Physics Highlights," Universidade Estadual Paulisa, São José do Rio Preto, Brazil, 8 July 2008.

08.10 "The Energy Landscape for Protein Folding and Function," Keynote Lecture, Biopolymers Gordon Research Conference, Salve Regina University Newport, Rhode Island, 8-13 June 2008.

08.9 "The energy landscape for protein folding and biomolecular motors," Symposium in Honor of William A. Eaton "New Challenges in Protein Science," Parma, Italy, 4-6 June 2008.

08.8 "The energy landscape for protein folding and function," The Carolina Center for Genome Sciences Seminar Series, University of North Carolina, Chapel Hill, North Carolina, 9 May 2008.

08.7 "The energy landscape for protein folding and function," UCSD Physics Colloquium, La Jolla, California, 17 April 2008.

08.6 " The energy landscape for folding and molecular motors," Symposium on Multiscale Modeling in Biophysics, Spring 2008 American Chemical Society National Meeting, New Orleans, Louisiana, 6-10 April 2008.

08.5 "The Energy Landscape for Folding and Function," Instituto de Física e Química de São Carlos, Universidade de São Paulo, São Carlos, Brazil, 24 March 2008.

08.4 "Protein Folding and Allostery," three lectures, ICAM/FAPERJ School on Biological Physics, organizer and lecturer, Rio de Janeiro, Brazil, 16-21 March 2008.

08.3 "The Physics of Protein Folding and Unfolding," Minisymposium Chair, 2008 Joint Biophysical Society Annual Meeting and IUPAB International Biophysics Congress, Long Beach, California, 2-6 February, 2008.

08.2 "Single molecule folding studies," *Protein Folding: IMA Annual Program Year Workshop*, Institute for Mathematics and its Applications, University of Minnesota, Minneapolis, 14-18 January 2008.

08.1 "The Energy Landscape for Protein Folding and Function," Protein Folding Dynamics Gordon Research Conference, Ventura, CA, January 6-11, 2008.

07.9 "The energy landscape for folding and function," Center for computational Biology and bioinformatics, IUPUI, Indianapolis, 24 September 2007.

07.8 "Protein Folding," keynote speaker, *School of Arts & Sciences HHMI Research Symposium*, University of Richmond, Virginia, 14 Sepetember 2007.

07.7 "Mechanisms of Protein Assembly and Folding: Lessons from Minimalist Models," *800 MHz NMR Facility Inauguration Symposium and the 2nd Annual Meeting of the Millennium Institute for Structural Biology in Biomedicine and Biotechnology*, Universidade Federal do Rio de Janeiro, Brazil, 3-5 September 2007

07.6 "Mechanisms of Protein Assembly and Folding: Lessons from Minimalist Models," 6th International Conference in Biological Physics, IUPAP, Montevideo, Uruguay, 27-3 August 2007.

07.5 "Mechanisms of Protein Assembly and Folding: Lessons from Minimalist Models," *From Computational Biophysics to Systems Biology (CBSB07)*, Jülich,Germany, May 2007.

07.4 "Mechanisms of Protein Assembly and Folding: Lessons from Minimalist Models," Department of Chemistry, Rice University, Houston, Texas, April 10, 2007.

07.3 "Mechanisms of Protein Assembly and Folding: Lessons from Minimalist Models," *theory seminar*, Department of Physics,University of British Columbia, Vancouver, Canada. March 26, 2007.

07.2 "Mechanisms of Protein Assembly and Folding: Lessons from Minimalist Models," Focus Session *Protein Folding:Theory and Simulations*, 2007 American Physical Society March Meeting, Denve, Colorado, March 5-9, 2007.

07.1 "The energy landscape for folding and function," *physics colloquium*, University of California at Davis, Davis, California, January 29, 2007.

06.13 "Water and Protein Folding," *Water and Biomolecules Workshop*, Kyoto, Japan, December 2007.

06.12 "Introduction to Theoretical Biophysics - The Energy Landscape for Folding and Function of Proteins," *physics colloquium*, University of Tokyo, Japan, December 2007.

06.11 "Protein Folding and Molecular Motors," *Discussion on theory and simulation of biomolecular nano-machines*, Kobe, Japan, December 2007.

06.10 "The Energy Landscape for Folding and Function," mini course in *XXXVII Latin-American School of Physics* (4 lectures), Unesp-IBILCE, São José do Rio Preto, São Paulo, Brazil, July 17-21, 2006.

06.09 "From the protein folding landscape to atomistic simulations," *Protein Folding: Principles and Diseases*, University of Toronto, Toronto, Canada, May 25-26, 2006.

06.08 "From the protein folding landscape to atomistic simulations," *Biomolecular Simulation: From Physical Principles to Biological Function*, 367. WE-Heraeus-Seminar, Bad Honnef, Germany, May 22-24, 2006.

06.07 "Exploiting minimalist models for protein folding and dynamics," Biophysics Seminar, Princeton University, Princeton, New Jersey, April 5, 2006.

06.06 "The Energy Landscape for Folding and Function," Lewis-Sigler Institute Seminars, Princeton University, Princeton, New Jersey, April 3, 2006.

06.05 "The Funnel Landscape for Protein Folding and Function," Bioinformatics Seminar Series, University of Michigan, Ann Arbor, Michigan, March 29, 2006.

06.04 "The Funnel Landscape for Folding and Function," Center for Computational Biology Seminar, Washington University at Saint Louis, Saint Louis, Missouri, March 24, 2006.

06.03 "The Energy Landscape for Folding and Function," Focus Session *Biopolymers I: Phase Transitions*, 2006 American Physical Society March Meeting, Baltimore, Maryland, March 13-17, 2006.

06.02 "The Energy Landscape for Folding and Function," Chemical Engineering Departmental Seminars, Princeton University, March 8, 2006.

06.01 "The Energy Landscape for Protein Folding and Function," Protein Folding Dynamics Gordon Research Conference, Ventura, CA, January 8-13, 2006.

05.15 "The energy landscape for protein folding and binding," Kyoto University, Kyoto, Japan, December 14, 2005.

05.14 "The energy landscape for folding and function," *International Symposium on Frontiers of Computational Science 2005*, Nagoya University, Nagoya, Japan, December 12-13, 2005.

05.13 "The energy landscape for protein folding and function," Physics Colloquium, Ohio State University, Columbus, Ohio, November 22, 2005.

05.12 "Vibrational assistance/coupling in electron transfer," *Catalysis by enzymes - beyond the transition state theory paradigm,*, Scientific Discussion Meeting, The Royal Society, London, United Kingdom, November 14-15, 2005.

05.11 "The energy landscape for folding and function," *Baker Symposium on Frontiers in Theoretical Chemistry*, Cornell University, Itahaca, NY, October 1, 2005.

05.10 "Exploiting Minimalist Models in the Protein Funnel Energy Landscape for Folding and Function ," Iowa State University, Ames, Iowa, September 19, 2005.

05.09 "Física do Enovelamento Proteíco", Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil, August 15, 2005.

05.08 "A Física de Protein Folding ", Universidade Estadual Paulista, São José do Rio Preto, Brazil, August 12, 2005.

05.07 "The energy landscape for protein interacting domains - connecting theory and experiments," *Frontiers in Biological Physics IV ; Signal Transduction and Protein Phosphorylation,* San Diego, CA, July 11-13, 2005

05.06 "The energy landscape for folding and function," *US-Japan Symposium on Folding, Design and Dynamics,* Philadelphia, PA, May 2-5,2005.

05.05 "Exploring the Protein Funnel Energy Landscape for Folding and Function," Symposium *Energy Landscapes in Clusters, Materials, and Biology,* 2005 American Physical Society March Meeting, Los Angeles, California, March 21-25, 2005.

05.04 "Exploring the Protein Funnel Energy Landscape for Folding and Function," Biophysics Lecture Series, California Institute of Technology, Pasadena, California, March 7, 2005.

05.03 "The Energy Landscape for Protein Folding and Function," Symposium *Protein Folding: Theory, Experiment and Design,* Biophysical Society 49th Annual Meeting, Long Beach, California, February 12-16, 2005.

05.02 "Exploring the protein funnel energy landscape for folding and function," University of Southern California, February 8, 2005

05.01 "Exploringng the Energy Landscape for Folding: Connecting Theory and Experiments," Biophysics and Chemistry and Chemical Biology Seminar, University of California at San Francisco, January 13, 2005.

04.18 "Modeling in Protein Folding," Meeting of the 21st Century fund, Indianapolis, Indiana, November 19, 2004.

04.17 "Exploring the protein funnel energy landscape for folding and function", Symposium on Interdisciplinary Science (ISIS), Northwestern State University, Natchitoches, LA, October 4-8, 2004.

04.16 "Exploring the protein folding funnel landscape: theory meets experiments," Theory and Computation in Molecular Biological Physics, CTBP Research Workshops and Summer Schools, La Jolla, CA, August 9-20, 2004.

04.15 "Exploiting Minimalist Models in Protein Folding," 18th Symposium of the Protein Society, San Diego, CA, August 14-18, 2004.

04.14 Organized the symposium "Protein Dynamics: Theory and Experiments Join Forces," 18th Symposium of the Protein Society, San Diego, CA, August 14-18, 2004.

04.13 "Understanding And Designing Electron Transfer Proteins," Electronic Processes In Organic Materials Gordon Conference, Mount Holyoke College, South Hadley, MA, July 25-30¿

04.12 "Exploring the protein funnel energy landscape for folding and function," Altenberg Workshop entitled "Modeling Biology: shape, behavior, evolution", Konrad Lorenz Institute for Evolution and Cognition Research, Altenberg, Austria, July 9-11, 2004.

04.11 "Exploiting minimalist models in the protein funnel energy landscape for folding and function ," A.J. Drexel Institute of Basic and Applied Protein Science, Philadelphia, Pennsylvania, June 15, 2004.

04.10 "Exploring the protein funnel energy landscape for folding and function," Workshop III: Structural Proteomics, Institute for Pure and Applied Mathematics, University of California, Los Angeles, May 10-14, 2004.

04.09 "The Physics of Protein Folding," Instituto de Física de São Carlos, Universidade de São Paulo, Brazil, April 30, 2004.

04.08 "A Importância de um Centro de Biologia e Física Teórica para a Ciência Contemporanea," Instituto de Física de São Carlos, Universidade de São Paulo, Brazil, April 30, 2004.

04.07 "Exploring the protein funnel energy landscape for folding and function," Second International Workshop on Spectroscopy for Biology, Rio de Janeiro, Brazil, April 24-29, 2004.

04.06 "Protein folding - contacting theory with experiments," Stony Brook University, New York, April 16, 2004.

04.05 "Exploring the protein funnel energy landscape for folding and function," 227th ACS National Meeting, Anaheim, CA, March 28-April 1, 2004.

04.04 "Exploring the Protein Funnel Energy Landscape for Folding and Function," Physics/Theoretical Colloquia Series, Los Alamos National Laboratory, March 11, 2004

04.03 "Exploring the Protein Folding Funnel Landscape: Connecting Theory and Experiments," University of California, Los Angeles, March 1,2004.

04.02 " Exploring the Protein Folding Funnel Landscape: Theory Meet Experiment ," BIFI2004 - IInternational Conference, Biology after the genome: a physical view, Zaragoza, Spain, February 11-13, 2004.

04.01 Protein Folding Dynamics Gordon Conference, Conference Chair, Ventura, California, January 11-16, 2004.

03.13 "Protein Folding Theory and Simulations," four lectures, Theoretical Approaches to Self Assembly in Protein and RNA Folding, National Tsing Hua University, Taiwan, December 15-19, 2003.

03.12 "Biological Physics," NRC's Committee on Atomic, Molecular, and Optical Science (CAMOS), National Academy of Sciences, Beckman Foundation, Irvine, November 15, 2003.

03.11 "Theoretical Biological Physics," Board on Physics and Astronomy, National Academy of Sciences, Beckman Foundation, Irvine, November 2, 2003.

03.10 "Exploring the protein folding funnel landscape. Connecting theory and experiments," Physical Chemistry Seminar, University of California, Los Angeles, October 27, 2003.

03.09 "The Protein Folding Funnel Landscape. Connecting Theory and Experiments," V Ibero-American Congress of Biophysics, Rio de Janeiro, Brazil, October 12, 2003.

03.08 "Exploring the Physical Mechanisms of the Protein Folding Funnel Landscape," Meeting of the Physical Society of Japan, Okayama, Japan, Sept. 21, 2003.

03.07 "Exploring the Protein Folding Funneling Landscape: Connecting Minimalist Models and All-Atom Simulations with Experiments," Lecture at the University of Tsukuba, Tsukuba, Japan, Sept. 17-19, 2003.

03.06 "Exploring the Protein Folding Funnel Landscape: Theory Meets Experiments," Meeting of the Chem-Bio Informatics Society of Japan, Tokyo, Japan, Sept. 17, 2003.

03.05 "Dynamical Control of Electron Tunneling Pathways in Proteins," Meeting of the Japan Science and Technology Projects, Tokyo, Japan, Sept. 16, 2003.

03.04 "Biological Physics," Inaugural Lecture of the Course of Física Biológica of the Universidade Estadual Paulista, São José do Rio Preto, Brazil, Aug. 20, 2003.

03.03 "The Energy Landscape for Protein Folding and Function," Hopfest Meeting, Princeton University, Princeton, June 7-8, 2003.

03.02 "Theory Making Connection to Experiments in Protein Folding," , University of Maryland, March 25, 2003.

03.01 "Exploring the Protein Folding Funnel Landscape: Connecting Minimalist Models and All-Atom Calculations with Experiments, The Seventh Johns Hopkins Folding Meeting , Coolfont Conference Center, Berkeley Springs, WV, March 22-25, 2003.

02.13 "Exploring the Protein Folding Funnel Landscape: Connecting Minimalist Models and All-Atom Calculations with Experiments, Inter-American Workshop on Synchroton Applications," Campinas, Brazil, December 9-11, 2002.

02.12 "Exploring the Protein Folding Funnel Landscape: Connecting Theory and Experiments," Princeton University, Princeton, December 2, 2002.

02.11 "Exploring the Protein Folding Funnel Landscape: Connecting Minimalist Models and All-Atom Calculations, Beckman Institute, University of Illinois, Urbana, October 21, 2002.

02.10 "Exploring the Protein Folding Funnel Landscape: Theory Meets Experiments, Structural Genomics Research Symposium, Institute for Genomics and Bioinformatics, University of California, Irvine, September 24, 2002.

02.9 "Dynamically Controlled Protein Tunneling Paths; Going beyond the Pathways model and possible applications to molecular electronics, Summer School on Molecular Electronics, Miraflores, Spain, September 15-20, 2002.

02.8 "Exploring the Protein Folding Funnel Landscape: Theory Meets Experiments, 16th Symposium of the Protein Society, San Diego, August 17-21, 2002.

02.7 "Discussion on Applying Landscape Theory in Biology, Symposium on Biological Physics: Frontiers or Wilderness, Aspen, Colorado, July 27-29, 2002.

02.6 " Quantum and Classical Transport in Condensed Phases, 4 lectures, Gordon Reseach Conferences Chemical Physics Summer School, Bristol, RI, June 16-28, 2002.

02.5 "New Ideas in Electron Transfer in Proteins, Department of Chemistry, University of California, San Diego, April 2, 2002.

02.4 "Protein dynamics controlling electron tunneling routes. Going beyond the Pathways Model, American Physical Society, Indianapolis, IN, March 17-22, 2002.

02.4 "Tunneling in Biology, American Physical Society, Indianapolis, IN, March 17-22, 2002.

02.3 "Protein Folding Landscapes: Theory Contacting with Experiments, Gordon Conference on Protein Folding Dynamics, Ventura, CA, Jan. 20-24, 2002.

02.2 "The Protein Folding Energy Landscape: Contacting Theory and Experiments, Workshop on Self Organizing Biomolecules: The Evolving Picture, Santa Fe, New Mexico, Jan. 13-18, 2002.

02.1 "The Protein Folding Energy Landscape: Contacting Folding and Function, Folding, Function and Funnels Meeting, Kona, Hawaii, Jan. 10-13, 2002.

01.16 " Computational and Theoretical Methods in Protein Folding," Duke University, Durhma, NC, Dec. 13, 2001.

01.15 "Th energy landscape for protein folding: connection theory and experiments," National Institutes of Health, Bethesda MD, Oct. 17, 2001.

01.14 "Exploring the protein folding funnel landscape: Connecting theory and experiments," Duke University, Durhma, NC, Oct 5, 2001.

01.13 "Electron Tunneling Routes in Proteins and Peptides. Going beyond the Pathways Model," Nicolas Cabrera International Summer School, Miraflores de la Sierra, Spain, September 17 - 21, 2001.

01.12 "Electron Tunneling Routes in Proteins and Peptides. Going beyond the Pathways Model," 4th International Conference on Biological Physics in 2001(ICBP2001), Kyoto, Japan July 30- August 3, 2001.

01.11 "Exploring the protein folding funnel landscape: theory meets experiments," California Institute of Technology, Pasadena CA, Jul. 20, 2001.

01.10 "Series of four lectures in theoretical and computational biophysics," Universidade Estadual Paulista, São José do Rio Preto, Brazil, June-July 2001.

01.9 "Intraprotein Charge Transfer," Bioenergetics Gordon Conference, Kimball Union Academy, Meriden, NH, June 17-22, 2001.

01.8 "Topological and Energetic Aspects of the Protein Folding Funnel Landscape," Blue Gene Seminars Series, IBM Yorktown, NY, May 29, 2001.

01.7 "Energy Landscapes of Proteins, Glasses and Clusters: Dynamics, Folding, Function and Prediction," Symposium organizer, American Chemical Society, San Diego, CA, April 1-4, 2001.

01.6 "Topological and Energetic Aspects of the Protein Folding Funnel Landscape," IBM Workshop on Protein Folding, San Diego, CA, March 30-31, 2001.

01.5 "Electron Tunneling in Proteins," Chemistry and Biochemistry seminar, University of California at Santa Barbara, Santa Barbara, CA, March 15, 2001.

01.4 "Exploring the protein folding funnel landscape: theory meets experiments," Physics Colloquium, University of Missouri, Columbia MI, March 5, 2001.

01.3 "Exploring the protein folding funnel landscape: theory meets experiments," Institute for Theoretical Physics, University of California, Santa Barbara CA, Feb. 14, 2001.

01.2 "Exploring the protein folding funnel landscape: theory meets experiments," Stanford University, Stanford CA, Jan. 29, 2001.

01.1 "Computational and Theoretical Mehtods in Protein Folding," three lectures in the Pan-American Advanced Studies Institute on Computational Materials Science, Santiago, Chile, Jan. 8-19, 2001.

00.5 "Exploring the rotein Folding Funnel Landscape: Theory Meets Experiments," IV Iberoamerican Biophysics Congress that will be held in Alicante, Spain, October 2000.

00.4 "Electron tunneling routes in proteins and peptides. Going beyond the Pathways model," VW-Schwerpunktstagung 2000 Meeting, Kreuth, Germany, June 2000.

00.3 "Exploring the rotein Folding Funnel Landscape: Connection to Experiments," Workshop on "Protein Folding: Simple Model and Experiments," Torino, Italy, May 2000.

00.2 "Exploring the rotein Folding Funnel Landscape: Theory Meets Experiments," Biophysics Research Division, University of Michigan, Ann Arbor, MI, February 2000.

00.1 "Quantitative Challenges in the Post-Genomic Sequence Era," Workshop and Symposium, Organizer, San Diego, January 2000.

99.17 "Exploring the rotein Folding Funnel Landscape: Connection Between Theory and Experiments," Kobe, Japan, November 1999.

99.16 "Exploring the rotein Folding Funnel Landscape: Theory Meets Experiments," International Conference on Reaction Dynamics in Condensed Chemical Systems, Kyoto, Japan, November 1999.

99.15 "Chemical Physics of Protein Folding," American Institute of Physics Corporate Associates Meeting, Corporate Research Laboratories of Exxon Research and Engineering Company, October 1999.

99.14 "Physical Models for Protein Folding," Mesoscopic Organization in Matter Workshop, The Institute for Complex and Adaptive Matter, Los Alamos National Laboratory, August 1999.

99.13 " Electron Tunneling in Proteins - beyond the Pathways Model," Bioenergetics symposium of the ACS Computers in Chemistry Division, American Chemical Society's 217th National Meeting, New Orleans, August 1999.

99.12 "Lectures on Protein Folding," Centre de Recherches Mathematiques Summer School on "Theoretical Physics at the End of the XXth Century," Banft, Canada, July 1999.

99.11 "Complicated Molecular Landscapes: The Next Addressable Problems Workshop," Telluride, Colorado, June–July 1999.

99.10 "Exploring the protein folding funnel landscape: connection to experiments," Gordon Research Conference on Proteins, Holderness School, Plymouth, New Hampshire, June 1999.

99.9 "Protein Folding," Physics Colloquium, University of California, Davis, May 1999.

99.8 " Explorando o "landscape" para enovelamento de proteínas: conexão com experimentos," XXII Encontro Nacional de Física da Matéria Condensada, São Lourenço, MG, Brazil, May 1999.

99.7 " Mecanismos de tunelamento de eletrons em proteinas: indo alem do modelo de Pathways," XXII Encontro Nacional de Física da Matéria Condensada, São Lourenço, MG, Brazil, May 1999.

99.6 "Protein Evolution and the Self Organization of Memory - An Intrinsic Learning Rule May Determine the Dominant Motifs," International Conference On Optimization In Computational Chemistry And Molecular Biology: Local And Global Approaches, Princeton University, May 1999.

99.5 "Exploring the protein folding funnel landscape," Seminar series organized by the interdisciplinary research-training grant between the Chemistry/Biochemistry, Molecular/Cellular Biology, and Engineering Departments, Arizona State University, April 1999.

99.4 "Exploring the protein folding funnel landscape: connection to experiments," Institute for Biophysical Dynamics of the Biological and Physical Sciences Divisions and Computations in Science, University of Chicago, Illinois, April 1999.

99.3 "Electron Tunneling in proteins: beyond the pathways model," James Franck Institute Colloquium, University of Chicago, Illinois, April 1999.

99.2 "Exploring the protein folding funnel landscape: connection between theory and experiments," Centenial Meeting of American Physical Society, Atlanta, Georgia, March 1999.

99.1 "Navigating the Protein Folding Funnel Landscape," San Diego State University, February 1999.

98.14 Exploring the protein folding funnel landscape," "Meeting of the Southwestern Section of the American Physical Society, Miami, Florida, November 1998.

98.13 "Exploring the protein folding funnel landscape: connection between theory and experiments," Department of Biochemistry, Duke University, October 1998.

98.12 "Exploring the protein folding funnel landscape: connecting theory and experiments," Michigan Institute of Technology, Houghton, Michigan, October 1998.

98.11 "Navigating the Protein Folding Funnel Landscape," Washington State University, Pullman, Washington, October 1998.

98.10 "Electron tunneling in proteins - beyond the pathways model," Third International Symposium on Biological Physics, Santa Fe, New Mexico, September 1998.

98.9 "Exploring the Funnel Energy Landscape for Protein Folding," CECAM Workshop on Computational exploration of energy landscapes in protein dynamics, Torino, Italy, June-July 1998.

98.8 "Exploring the Funnel Energy Landscape for Protein Folding," Instituto Nazionale per la Fisica della Materia (INFM) Meeting, Rimini, Italy, June 1998.

98.7 "Electron Tunneling in Proteins," Instituto Nazionale per la Fisica della Materia (INFM) Meeting, Rimini, Italy, June 1998.

98.6 "Theoretical and Computational Aspects of Protein Foldind," Doing Science at the Interface Workshop, Burroughs Wellcome Fund, Berkeley, California, June 1998.

98.5 "What Are the Constraints on the Evolution and Diversity of Bioplymers," Dahkem Workshop on Simplicity and Complexity in Proteins and Nucleic Acids, Berlin, Germany, May 1998.

98.4 "Exploring the protein folding funnel landscape: towards a connection between theory and experiments," Johns Hopkins University, Baltimore, April 1998.

98.3 "Energy Landscapes and Funnels in Protein Folding," Georgia Institute of Technology, Atlanta, April 1998.

98.2 "Energy Landscapes and Funnels in Protein Folding," University of California at Davis, March 1998.

98.1 "Exploring the energy landscape of protein folding funnels: connection to fast folding experiments," University of Pennsylvania, Philadelphia, January 1998.

97.14 "Exploring the Energy Landscape of Protein Folding Funnels," Symposium on Stochastic Processes in Chemistry, Fifth Chemical Congress of North America, Cancun, Mexico, November 1997.

97.13 "Protein Folding Funnel Landscapes – Connection between Theory and Experiments," Symposium on Frontiers of Science, National Academy of Sciences, Irvine, CA, November 1997.

97.12 "Pathway tubes and pathway interference as the building blocks for understanding biological electron transfer and designing novel electron transfer proteins," Institute of Material Science, University of Tsukuba, Tsukuba, Japan Oct. 24, 1997.

97.11 "Electron Tunneling Pathways and Tubes: Designing novel electron transfer proteins," the Department of Chemistry, University of Kyoto, Kyoto, Japan Oct. 28, 1997.

97.10 "Exploring the Energy Landscape of Protein Folding Funnels," two lectures of three hours, Department of Chemistry, University of Nagoya, Nagoya, Japan Oct. 13 and 14, 1997.

97.9 "Theoretical and Computational Aspects in the Protein Folding Funnel Landscape," National Academy of Sciences Colloquium on Computational Biomolecular Science, Irvine, CA, September 1997.

97.8 Pathway tubes and pathway interference as the building blocks for understanding biological electron transfer and designing nove electron transfer proteins," Institute for Molecular Science (Bunshi Kagaku Kenkyujyo) - Okasaki National Research Institutes, Okasaki, Japan Sept. 3, 1997.

97.7 "Exploring the Energy Landscape of Protein Folding Funnels," Institute for Fundamental Chemistry, Kyoto, Japan Aug. 28, 1997.

97.6 "Intra-Protein and Inter-Protein Electron Tunneling," Gordon Research Conference on Photosynthesis, Plymouth, New Hampshire, August 1997.

97.5 "Protein Folding Funnels – Theory and Experiments," International Symposium in Protein Condensation, Rio de Janeiro, Brazil, May 1997.

97.4 "Exploring the Protein Folding Landscape," Physics Colloquium, Los Alamos National Laboratory, April 1997.

97.3 "Navigating the Protein Folding Funnel Landscape," University of Washington, Seattle, March 1997.

97.2 "Electron Transfer in Proteins - Going Beyond Pathways," 37th Sanibel Symposia on Theoretical and Computational Chemistry, St. Augustine, Florida, March 1997.

97.1 "Exploring the Protein Folding Funnel Landscape – Connecting Theory and Experiments," Keynote Lecture, Workshop on Computational and Mathematical Biology, University of California at Los Angeles, Feb. 1997.

96.22 "Electron Transfer in Proteins," Pennsylvania State University, Nov. 1996.

96.21 "Exploring the Protein Folding Funnel Landscape: Relationship to experiments," University of California at Santa Cruz, October 1996.

96.20 "Exploring the Energy Landscape of Protein Folding Funnels," Symposium on Structural Biology, The Cornell Theory Center's (CTC) fourth annual Symposium, October 1996.

96.19 "Navigating the Protein Folding Landscape: Connection to Experiments," University of California at Irvine, October 1996.

96.18 "Exploring the Energy Landscape Protein Folding Funnels," Japanese Physical Society Meeting, Yamaguchi, Japan, October 1996.

96.17 "Pathway Tubes Controlling Electron Transfer in Proteins," The 56th Okazaki conference on "Condensed Phase Quantum Dynamics: Application to Chemical Systems," Institute for Molecular Science, Okazaki, Aichi 444, JAPAN, September 1996.

96.16 "Protein Folding Funnels: Exploring the Energy Landscape," Second International Symposium on Theory of Atomic and Molecular Clusters, Fontana, Wisconsin, September 1996.

96.15 "Protein Folding Funnels: Theory and Experiments," Unversidade Federal de Pernambuco, Recife, Brazil, September 1996.

96.14 Course on "Protein Folding: Theory and Experiments," Universidade de São Paulo, São Paulo, Brazil, September 1996.

96.13 "The Energy Landscape for Protein Folding Funnels and the Nature of the Transition State Ensemble," 212th American Chemical Society National Meeting, Orlando, Florida, August 1996.

96.12 "Exploring the Energy Landscape of Protein Folding Funnels," Second Workshop on Theoretical and Computational Biology, Lawrence Berkeley Laboratory, August 1996.

96.11 "Quantum Dissipation in Chemical and Biological Reactions," Workshop on quantum dissipation and applications, International Centre for Theoretical Physics, July-August 1996.

96.10 Course on "Spin Glasses, Protein Folding and Structure of Energy Landscapes," 1996 Complex Systems Summer School, Santa Fe Institute, June 1996.

96.9 "Connecting Lattice Simulations to Experiments on Fast Folding Proteins, Center for Nonlinear Studies (CNLS), Los Alamos National Laboratory, June 1996.

96.8 "A Landscape Theory for Protein Folding Funnels." Physics Colloquium, University of California at Riverside, June 1996.

96.7 "Navigating the Protein Folding Energy Landscape," Center for Nonlinear Science 16th Annual International Conference, "Landscapes Paradigms in Physics and Biology, Los Alamos, May 1996.

96.6 "The Energy Landscape for Protein Folding Funnels and the Nature of the Transition State Ensemble," Laboratory of Chemical Physics, National Institutes of Health, MD, May 1996.

96.5 "Electron Transfer in Biomolecules: Tubes as the Building Blocks for Designing New Proteins," Arizona State University, Phoenix, April 1996.

96.4 " Pathway Tubes as the Building Blocks for Designing Electron Transfer Proteins," Beckman Institute, University of Illinois, Urbana, April 1996.

96.3 Director and Lecturer of the "Seventh College in Biophysics," International Centre for Theoretical Physics, Trieste, Italy, March 1996.

96.2 "Protein Folding Funnels Discussion," Beckman Institute Protein Folding Workshop, Caltech, Pasadena, February 1996.

96.1 "Mathematical, Physical, and Computational Problems and Models for Protein Folding," Workshop on Protein Folding, San Diego Supercomputer Center, La Jolla, January 1996.

95.16 "Protein Folding Funnels: Navigating the Energy Landscape," Meeting of Program in Mathematics and Molecular Biology IV, Santa Fe, New Mexico, November 1995.

95.15 "Protein Folding Funnels," Workshop on Nonlinear Dynamics in Molecular Evolution and Engineering, University of California at Los Angeles, November 1995.

95.14 "Understanding How the Protein Environment Determines Tunneling Matrix Elements; Beyond the Single Pathway Picture," 31st Annual American Chemical Society Western Regional Meeting, San Diego, October 1995.

95.13 "Minimalist Models for Protein Folding, Applications to Experiments," Summer School on Physics of Biological Systems, Nordita, Copenhagen, Denmark, August 1995.

95.12 "Electron Transfer in proteins: Beyond the Single Pathway Approach," The Technical University of Denmark, Lyngby, Denmark, August 1995.

95.11 "Electron Transfer in Proteins," series of lectures, University of São Paulo, São Paulo, Brazil, August 1995.

95.10 "Protein Folding: Navigating the Folding Routes," University of São Paulo, São Paulo, Brazil, August 1995.

95.9 Workshop on "Quantitative Biophysics at the Molecular and Macromolecular Scales," International Centre for Theoretical Physics, Trieste, Italy, June-July 1995.

95.8 "Long Range Electron Transfer in Azurin: How Good Is the Single Pathway Picture," The 28th Jerusalem Symposium in Quantum Chemistry and Biochemistry, Jerusalem, Israel, May 1995.

95.7 "Theoretical Methods for Dissecting Electron Tunneling Interactions in Proteins: Single versus Multiple Pathways," Workshop on Quantum Simulations Methods, Les Houches, France, May 1995.

95.6 "Protein Folding Funnels," Carnagie Mellon University, Pittsburgh, April 1995.

95.5 "Single versus Multiple Pathways in Protein Electron Transfer: The Azurin Case," West Coast Theoretical Chemistry Conference, San Diego, California, March 1995.

95.4 Organizer for the Symposia on Electron Tunneling in Biology and Protein Folding in the 1995 American Physical Society March Meeting, San Jose, California, March 1995.

95.3 "Electron Transfer in Proteins and Reaction Centers: Single Pathways and Beyond," The Feldafing-III Meeting on Reaction Centers of Photosynthetic Bacteria, Structure and Dynamics, Munich, Germany, March 1995.

95.2 "Towards an Outline of the Topography of a Realistic Protein Folding Funnel," Scripps Institute of Oceanography, University of California, San Diego, January 1995.

95.1 "Towards an Outline of the Topography of a Realistic Protein Folding Funnel," Department of Physics, University of California, San Diego, January 1995.

94.14 "Computing Tunneling Matrix Elements in Proteins: ¿From Pathway Families to Renormalized Proteins," European Science Foundation Workshop, Jyväskylä, Finland, December 1994.

94.13 "Exploring the Protein Folding Landscape: Simple Model Study of Folding Dynamics," Symposium on Distance–Based Approaches to Protein Structure Determination II, The Royal Danish Academy of Sciences and Letters, Copenhagen, Denmark, November 1994.

94.12 Director and Lecturer of the "College in Biophysics," International Centre for Theoretical Physics, Trieste, Italy, September-October 1994.

94.11 "Simple Models for Protein Folding: A Kinetic View," Canadian-American-Mexican Meeting of Physical Societies (CAM94), Cancun, Mexico, September 1994.

94.10 "Kinetic and Thermodynamic Study of Protein–Like Lattice Heteropolymers," Aspen Center for Physics, Aspen, Colorado, September 1994.

94.9 "Electron Tunneling in Proteins: Single or Multiple Pathways?" 208th American Chemical Society Meeting, Washington, D.C., August 1994.

94.8 "Theoretical Methods for Dissecting Electron Tunneling Interactions in Proteins: From Pathway Families to Renormalized Proteins," Gordon Conference on Electron Donor-Acceptor Interactions, Salve Regina University, Newport, RI, August 1994.

94.7 "International Interdisciplinary Conference: Frontiers in Biological Physics," Co-Chairman, La Jolla, CA, July 1994.

94.6 "Folding Kinetics of Protein–Like Hetero–Polymers," International Interdisciplinary Conference: Frontiers in Biological Physics, La Jolla, CA, July 1994.

94.5 "Electron Transfer in Proteins: Theory Helping to Design New Molecules," 17th Sociedade Brasileira de Química Meeting, Caxambu, MG, Brazil, May 1994.

94.3 "Many Minima Problem in Protein Folding," Sixth University of California Conference on Statistical Mechanics, Riverside, CA, March 1994.

94.2 "Simple Models for Protein Folding," University of Pittsburgh, Pittsburgh, PA, March 1994.

94.1 "Simple Models for Protein Folding," California Institute of Technology, Pasadena, CA, February 1994.

93.6 "The Second Britton Chance Research Discussion Meeting," University of Pennsylvania, Philadelphia, November 1993.

93.5 "Electron Tunneling Pathwyas in Macromolecules," 11th International Biophysics Congress, Budapest, Hungary, July 1993.

93.4 "Folding Funnels: A Kinetic View of the Protein Folding Problem," National Institute of Health, April 1993.

93.3 "Protein Folding Funnels," Lecture presented in the 1993 American Physical Society March Meeting, Seattle, Washington, March 1993.

93.2 "Protein Folding Funnels," University of California, Santa Barbara, January 1993.

93.1 Coordinator of the "Miniprogram on Biomolecular Folding," Institute for Theoretical Physics, University of California, Santa Barbara, January 1993.

92.6 "Electron Transfer Pathways in Proteins; Theory Helping to Design Experiments," Chemistry Department, University of California, San Diego, December 1992.

92.5 "The Protein Folding Problem: A Kinetic View," Physics Colloquium, University of California, San Diego, November 1992.

92.4 Director of the "V College in Biophysics," International Centre for Theoretical Physics, Trieste, Italy, September-October 1992.

92.3 "Designing Electron Transfer Reactions in Proteins: Possible Applications to Molecular Electronics Devices," Lecture presented in the Symposium for Molecular Electronics, First World Congress on Electricity and Magnetism in Biology and Medicine, Orlando, Florida, June 1992.

92.2 "Energy Landscapes, Glass Transitions, and Chemical Reaction Dynamics in Biomolecular or Solvent Environments," and "Protein Folding Funnels, Kinetic Pathways through Compact Conformation Space," Department of Chemistry, University of Pittsburgh, April 1992.

92.1 "Protein Dynamics Control of Electron and Proton Transfer Reactions," Lecture to be presented in the ASBMB–Biophysical Society Meeting, Houston, Texas, February 1992.

91.4 "Tunneling in Proteins and Molecular Electronics", Lecture presented in the Symposium on Molecular Electronics and Biomolecular Electronics, 4th Chemical Congress of North America, New York, August 1991.

91.3 "Dynamics and Control of Charge Transfer in Biomolecules," Lectures presented in the Princeton Lectures in Biophysics, Princeton, June 1991.

91.2 "Tunneling in Proteins," Lecture presented to the Institute for Advanced Studies of the Universidade de São Paulo, Brazil., June 1991

91.1 "Tunneling Pathways in Proteins," Department of Physics, Unversity of California at Davis, May 1991.

90.4 "Tunneling Pathways in Proteins: From Biology to Molecular Electronics," Lecture presented in the 12th Annual International Conference IEEE, Enginnering in Medicine and Biology Society, Phyladelphia, November 1990.

90.3 "Quantum and Classical Aspects of Electron Transfer Reactions – Applications to Chemical and Biological Systems," Lecture presented in 10th International Congress of Biophysics, Vancouver, Canada, July 1990.

90.2 "New Ideas in Molecular Biophysics and Molecular Electronics," NEC Research Institute, Princeton, June 1990.

90.1. "Molecular Electronics," Department of Chemistry, University of California, San Diego, April 1990.

89.1. "Molecular Electronics: The Shift Register Memory Based on Electron Transfer and Where We Go from Here," University of Illinois, Urbana, February 1989.

88.3 "Reaction Rates in Biological Systems," AT&T Bell Laboratories, October 1988.

88.2 "Theory of Chemical Reactions in Condensed Matter, Applications to Chemistry and Biology," Physics Colloquium, University of California, San Diego, October 1988.

88.1 "Theory of Reaction Rates in Biophysics," 5 Lectures at the 4th Summer College in Biophysics, " International Centre for Theoretical Physics, Trieste, Italy, September 1988.

87.1 "Theoretical models for electron transfer pathways in proteins," University of Pennsylvania, Department of Biophysics, March 1987.

Research Publications

09.05 "Robustness and generalization of structure-based models for protein folding and function," submitted to *Prot.: Struct. Func. Bioinf.*, (2009), H. Lammert, A. Schug and J.N. Onuchic.

09.04 "Dodging the crisis of folding proteins with knots," *Proc. Natl. Acad. Sci.* **106**, 3119-3124 (2009), J. Sulkowska, P. Sulkowski and J.N. Onuchic.

09.03 "Ligand-induced global transitions in the catalytic domain of protein kinase A," *Proc. Natl. Acad. Sci.* **106**, 3023-3028 (2009), C. Hyeon, P.A. Jennings, J.A. Adams, and J.N Onuchic.

09.02 "Non-local helix formation is key to understanding S-adenosylmethionine riboswitch function," *Biophys. J.: Biophys. Let.* **96**, L07-L09 (2009), P.C. Whitford, A. Schug, J. Saunders, S.P. Hennelly, J.N. Onuchic, and K.Y. Sanbonmatsu.

09.01 "An all-atom structure-based potential for proteins: Bridging minimal models with all-atom empirical forcefields," *Prot.: Struct. Func. Bioinf.* **75**, 430-441 (2009), P.C. Whitford, J.K. Noel, S. Gosavi, A. Schug, K.Y. Sanbonmatsu, J.N. Onuchic.

08.12 "Special issue on protein folding: experimental and theoretical approaches," *HFSP Journal* **2**, 295-296 (2008), J.N. Onuchic.

08.11 "Extinction and resurrection in gene networks," *Proc. Natl. Acad. Sci.* **105**, 19164-19170 (2008), D. Schultz, A.M. Walczak, J.N. Onuchic and P.G. Wolynes.

08.10 "Energy Balance and Dynamics of Kinesin Motors," in Energy Flow in Proteins," David Leitner and John Straub, eds., Taylor and Francis/CRC press, Boca Raton, 2008, in press, C. Hyeon and J.N. Onuchic.

08.09 "Coarse-Grained Structure-Based Simulations of Protein and RNA," in Coarse-Graining of Condensed Phase and Biomolecular Systems, G Voth, ed., Taylor and Francis/CRC press, Boca Raton, 2008, pp. 123-140, A. Schug, C. Hyeon and J.N. Onuchic.

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08.06 "Extracting function from a β-trefoil folding motif," *Proc. Natl. Acad. Sci.* **105**, 10384-10389 (2008), S. Gosavi, P.C. Whitford, P.A. Jennings and J.N. Onuchic.

08.05 "Quantum tunneling in biological reactions: The interplay between theory and experiments," *J. Braz. Chem. Soc.* **19**, 206-210 (2008), J.N. Onuchic, C. Kobayashi and K.K. Baldridge.

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06.07 "Effective stochastic dynamics on a protein folding energy landscape," *J. Chem. Phys* **125**, art no. 502630 (2006), S. Yang, J.N. Onuchic and H. Levine.

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05.13 "Self-regulating gene: An exact solution," *Phys. Rev. E* **72**, art. no. 051907 (2005), J. E. M. Hornos, D. Schultz, G. C. P. Innocentini, J. Wang, A. M. Walczak, J. N. Onuchic, and P. G. Wolynes.

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