

UNIVERSITY OF MIAMI
Curriculum Vitae
Standard Format

1. Date: February 10, 2006

PERSONAL

2. Name: **Vincent T. Moy**

3. Home Phone: (305) 858-4803

4. Office Phone: (305) 243-3201

5. Home Address: 3060 Calusa Street, Miami, FL 33133

6. Current Academic Rank: Associate Professor

7. Primary Department: Physiology and Biophysics

8. Secondary or Joint Appointment: Chemistry

9. Citizenship: USA

10. Visa Type: -----

HIGHER EDUCATION

11. Institutional:

Postdoctoral Research Biochemist, 1988-1993, Department of Chemistry, UC, San Diego;

Research Advisor: Adrienne A. Brian, Ph.D.

Ph.D. in Chemical Physics, 1988, Department of Chemistry, Stanford University;

Research Advisor: Harden M. McConnell, Ph.D.

B.A. in Mathematics and Biophysics, 1984, University of Pennsylvania.

12. Non-Institutional: None

13. Certification, licensure: None

EXPERIENCE

14. Academic:

Associate Professor, 2001-present, Department of Physiology & Biophysics, University of Miami School of Medicine.

Assistant Professor, 1995-2001, Department of Physiology & Biophysics, University of Miami School of Medicine.

Assistant in Physics, 1993-1995, Physik-Department, Technische Universität München, Garching, Germany.

Research Assistant, 1982-1984, Dept. of Biochemistry & Biophysics, Univ. of Pennsylvania; Research Advisor: Jane M. Vanderkooi, Ph.D.

15. Non-Academic: None

16. Military: None

PUBLICATIONS

17. Books and monographs published: None

18. Juried or refereed journal articles and exhibitions:

- 1) Li, F., S.D. Redick, H.P. Erickson, and V.T. Moy (2006). Effects of affinity modulation on the dynamic strength of the $\alpha 5\beta 1$ integrin-fibronectin interaction. (in preparation).
- 2) Wojcikiewicz, E.P., Abdulreda, M.H., Moy, V.T. (2006) Force Spectroscopy of LFA-1 and its ligands, ICAM-1 and ICAM-2 (submitted).
- 3) Zhang, X., Wojcikiewicz, E.P., Moy, V.T. (2006) Dynamic Adhesion of T- lymphocytes to Endothelial Cells Revealed by Atomic Force Microscopy (submitted).
- 4) Wojcikiewicz, E.P. & Moy, V.T. (2006). Mechanisms of avidity modulation in leukocyte adhesion studied by AFM. *Force Microscopy: Application in Biology and Medicine*, Bhanu P. Jena and Johann Karl H. Hörber, Ed., John Wiley & Sons Inc. (in press).
- 5) Zhang, X., & Moy, V.T. (2006). Intermolecular forces of leukocyte adhesion molecules. *Force Microscopy: Application in Biology and Medicine*, Bhanu P. Jena and Johann Karl H. Hörber, Ed., John Wiley & Sons Inc. (in press).
- 6) Wojcikiewicz, E.P., Kwak, K.J., Moy, V.T. (2006): Microscopy, Scanning Force. *The Wiley Encyclopedia of Medical Devices and Instrumentation, 2nd Edition* (in press).
- 7) Eibl, R.H., & Moy, V.T. (2005). AFM based adhesion Measurements of single receptor-Ligand bonds on living cells *Meth Mol. Biol.* 305:439-450.
- 8) Zhang, X., Chen, A., Wojcikiewicz, E., Abdulreda, M.H., Banerjee, S., Moy, V.T. (2005): Probing ligand-receptor interactions with Atomic Force Microscopy. (p. 399-413). *Protein-Protein Interactions: A Molecular Cloning Manual*, Cold Spring Harbor Laboratory Press.
- 9) Zhang, X., Humphries, M.J., & Moy, V.T. (2004). Single molecule force spectra of the integrin VLA-4/VCAM-1 interaction. *Biophys. J.* 87:3470-8.

- 10) Zhang, X.H. Bogorin, D.F., & Moy, V.T. (2004). Molecular Basis of the Dynamic Strength of Sialyl Lewis x – Selectin Interaction. *Chem. Phys. Chem.* 5:175-182.
- 11) Zhang, X.H., Chen, A., Deleone, D., Li, H., Noiri, E., Moy, V.T. and Goligorsky, M.S. (2004) Leukocyte adhesion to endothelial cells, adhesion energy and transmigration are inhibited by a cyclic Arginine-Glycine-Aspartic Acid peptide. *Am J Physiol Heart Circ Physiol.* 286: H359-H367. times cited: 0
- 12) Wojcikiewicz, E., Zhang, X., & Moy, V.T. (2004). Force and compliance measurements on living cells using atomic force microscopy (AFM). *Biol. Proc. Online.* 6:1-9. times cited: 0
- 13) Wojcikiewicz, E., Zhang, X.H., Chen, a. and Moy, V.T. (2003) Contributions of molecular binding events and cellular compliance to the modulation of leukocyte adhesion. *J Cell Science*, 116, 2531-2539. times cited: 2
- 14) Li, F., Redick, S.D., Erickson, H.P. and Moy V.T. (2003) Force measurements of the $\alpha 5\beta 1$ integrin-fibronectin interaction. *Biophys. J.*, 84:1252-1262. times cited: 13
- 15) Zhang, X.H. and Moy, V.T. (2003) Mechanisms for cooperative adhesion of ligand-receptor bonds. *Biophysical Chem*, 104, 271-278. times cited: 3
- 16) Zhang ,X., Wojcikiewicz, E., & Moy, V.T. (2002). Probing single icam-1/lfa-1 interaction under external force. *Scientific World Journal.* 2(1 Suppl 2):41-2. times cited: 0
- 17) Micic, M., Zheng, Y., Moy, V.T., Zhang, X.H., Andreanopolous, F, Hua, F.Q. and Leblanc, R.M. (2003) Comparative studies of surface topography and mechanical properties of a novel photoswitchable, biocompatible PEG-NC based hydrogel. *Colloids and Surfaces B: Biointerface*, 27:147-158. times cited: 0
- 18) Zhang, X.H., Wojcikiewicz, E., and Moy, V.T. (2002) Force spectroscopy of the Leukocyte Function-Associated Antigen-1 (LFA-1)/Intercellular Adhesion Molecule-1 (ICAM-1) interaction. *Biophys. J.*, 83: 2270-79. times cited: 13
- 19) Chen A., and Moy V.T. (2002) Single-molecule force measurements. *Methods Cell Biol* 68:301-9. times cited: 3
- 20) Micic M, Radotic K, Benitez I, Ruano M, Jeremic M, Moy V, Mabrouki M, Leblanc RM. (2001) Topographical characterization and surface force spectroscopy of the photochemical lignin model compound. *Biophys. Chem.*, 94: 257-263. times cited: 1
- 21) Ahmed, N., Nino, D.F., & Moy, V.T. (2001) Measurement of solution viscosity by atomic force microscopy. *Rev. Sci. Instruments*, 72: 2731-34. times cited: 4
- 22) Zhang, X., Chen, A., Wojcikiewicz, E., & Moy, V.T. (2001) Probing ligand-receptor interactions with atomic force microscopy. Chapter 13 of *Protein-Protein Interactions: A Molecular Cloning Manual* (Erica A. Golemis, Ed.), Cold Spring Harbor Laboratory Press. times cited: 0
- 23) Micic, M., Benitez I., Ruano, M., Mavers, M., Jeremic, M., Radotic, K., Moy, V.T., & Leblanc, R.M. (2001). Probing the lignin nanomechanical properties and lignin-lignin interactions using the atomic force microscopy., *Chem. Phys. Letters*, 347:41-45. times cited: 6
- 24) Yuan, C., Chen, A., Kolb, P., & Moy, V.T. (2000). Dynamic strength of individual ligand-receptor complexes measured by atomic force microscopy. *Biochemistry*, 39, 10219-10223. times cited: 22
- 25) Chen, A., & Moy, V. T. (1999). Crosslinking of cell surface receptors enhances cooperativity of adhesion., *Biophys. J.*, 78, 2814-20. times cited: 25

- 26) Micic, M., Chen, A., LeBlanc, R. M., & Moy, V. T. (1999). SEM studies of protein-functionalized AFM cantilever tips. *Scanning*, 21(6), 394-7. times cited: 8
- 27) Wong, J., Chilkoti, A., & Moy, V.T. (1999). Direct force measurements of the streptavidin-biotin interaction. *Genet. Anal. Biomol. Eng.*, 16, 45-55. times cited: 10
- 28) Moy, V.T., Jiao, Y., Hillmann, T., Lehmann, H., & Sano, T. (1998). Surface energy of receptor-mediated interaction measured by elastic deformation. *Biophys. J.*, 76, 1632-1638. times cited: 13
- 29) Wu, H. W., Kuhn, T., & Moy, V.T. (1998). Mechanical properties of L929 cells crosslinking. *Scanning*, 20, 389-397. times cited: 25
- 30) Florin, E.-L., Reif, M., Lehmann, H. Ludwig, M. Dornmair, K., Moy, V.T. & Gaub, H.E. (1995). Sensing specific molecular interactions with the atomic force microscope. *Biosensors & Bioelectronics*, 10 , 895-901. times cited: 102
- 31) Moy, V.T., Florin, E.-L., Rief, M., Lehmann, H., Ludwig, M., Gaub, H. E. & Dornmair, K. (1995). Probing the forces between complementary strands of DNA with the atomic force microscope. *Scanning Probe Microscopies III, Proc. SPIE*, 2384, 2-12. times cited: 0
- 32) Moy, V. T., M. Rief, M. Ludwig, E.-L. Florin, and H. E. Gaub. (1994). Characterization of the adhesive force between avidin functionalized AFM tip and biotin derivatized beaded agarose. *Int. Scanning Microscopy*: 17, 99-104. times cited: 0
- 33) Moy, V.T., Florin, E.-L., & Gaub, H. E. (1994). Forces and energies between ligand and receptor. *Science*, 266, 257-259. times cited: 325
- 34) Moy, V.T., Florin, E.-L., & Gaub, H. E. (1994). Adhesive forces between ligand and receptor measured by AFM. *Colloids & Surfaces*, 93, 343-348. times cited: 54
- 35) Ludwig, M., V. T. Moy, M. Rief, E.-L. Florin, and H. E. Gaub. (1994). Characterization of the adhesion force between avidin-functionalized AFM tips and biotinylated agarose beads. *Microscopy Microanalysis Microstructures*. 5, 321-328. times cited: 17
- 36) Florin, E.-L., V. T. Moy, and H. E. Gaub. 1994. Adhesion forces between individual ligand-receptor pairs. *Science*. 264:415-417. times cited: 683
- 37) Lollo, B.A., Chan, K. W. H., Hanson, E.M., Moy, V.T., & Brian, A. A. (1993). Direct evidence for two affinity states for lymphocyte function-associated antigen-1 (LFA-1) on activated T cells. *J. Biol. Chem.*, 268, 21693-21700. times cited: 148
- 38) Moy, V. T., & Brian, A. A. (1992). Signaling by lymphocyte function-associated antigen 1 (LFA-1) in B cells: enhanced antigen presentation after stimulation through LFA-1. *J. Exp. Med.*, 175, 1-7. times cited: 63
- 39) Kuhlman, P., Moy, V. T., Lollo, B. A., & Brian, A. A. (1991). The accessory function of murine intercellular adhesion molecule-1 in T lymphocyte activation. Contributions of adhesion and co-activation. *J. Immunol.*, 146(6), 1773-82. times cited: 185
- 40) Moy, V. T., Keller, D. J., & McConnell, H. M. (1989). Molecular order infinite two-dimensional crystals of lipid at the air-water interface. *J. Phys. Chem.*, 92, 5233-5238. times cited: 38
- 41) McConnell, H. M., & Moy, V. T. (1989). Shapes of finite two-dimensional lipid domains. *J. Phys. Chem.*, 92, 4520-4525. times cited: 120
- 42) Moy, V. T., Keller, D. J., Gaub, H. E., & McConnell, H. M. (1986). Long range molecular orientational order in monolayer solid domains of phospholipid. *J. Phys. Chem.*, 90, 3198-3202. times cited: 128

- 43) Keller, D. J., McConnell, H. M., & Moy, V. T. (1986). Theory of superstructure in monolayer phase transition. *J. Phys. Chem.*, 90, 2311-2315. times cited: 109
- 44) Gaub, H. E., Moy, V. T., & McConnell, H. M. (1986). Reversible formation of plastic two-dimensional lipid crystals. *J. Phys. Chem.*, 90, 1721-1725. times cited: 83
- 45) Vanderkooi, J. M., Moy, V. T., Maniara, G., Koloczek, H., & Paul, K. G. (1985). Site-selected fluorescence spectra of porphyrin derivatives of heme proteins. *Biochemistry*, 24, 7931-7935. times cited: 30
- 46) Dixit, B. P. S. N., Moy, V. T., & Vanderkooi, J. M. (1984). Reactions of excited-state cytochrome *c* derivatives: Delayed fluorescence and phosphorescence of zinc, tin and metal free cytochrome *c* at room temperature. *Biochemistry*, 23, 2103-2107. times cited: 10

19. Other works and publications:

- 1) Moy, V. T., Lollo, B. A., & Brian, A. A. (1990). Production and characterization of secreted murine intercellular adhesion molecule-1 (ICAM-1). *Fed. Proc.*, 4, 2838.
- 2) Lollo, B. A., Moy, V. T., & Brian, A. A. (1991). Measurement of the affinity of the ICAM-1/LFA-1 interaction. *Fed. Proc.*, 5, 3636.
- 3) Wagner, D., Moy, V.T., Hofmann, U.G., Benoit, M., & Gaub, H.E. (1994). AFM - The art of touching molecules. *Proc. ICEM 13, Applications in Biological Science*, 3B, 751-752.
- 4) Reif, M., Moy, V.T., Florin, E.-L., Ludwig, M. & Gaub, H.E. (1994). Functionalization of AFM tips with avidin. In *Procedures in Scanning Probe Microscopies*, John Wiley & Sons Ltd.
- 5) Moy, V.T., Florin, E.-L., Rief, M., Ludwig, M. & Gaub, H.E. (1994). Intermolecular forces and energies between avidin and biotin. *NATO ASI Series*.

20. Other works accepted for publication: None

PROFESSIONAL

21. Funded Research Performed:

- 1) Whitaker Foundation Biomedical Engineering Research Grant, "Application of Atomic Force Microscopy in the Investigation of the Micromechanical Properties of Cells", funding period: 9/96-2/2000, amount: \$208,599.
- 2) NIH (1 R29 GM55611-01), "Protein-Mediated Molecular Adhesion: AFM studies", funding period 5/97-4/2002, amount: \$349,784.
- 3) American Cancer Society (RPG CSM-98727), "Mechanisms of Cell Adhesion in Lymphocyte Activation", funding period: 7/1/99-6/30/2002, amount \$400,000.
- 4) NIH minority supplement grant, "Mechanism of Cell Adhesion Studied by AFM", funding period 6/1/99-5/31/2002, amount \$87,000.

- 5) AHA Grant-in-Aid, "Mechanisms of Avidity Modulation in Leukocyte Adhesion", funding period 7/1/2003-6/30/2005, amount \$120,000.
 - 6) NIH (1 RO1 GM055611-06). "Protein-Mediated Molecular Adhesion: AFM studies", funding period 9/2003-8/2007, amount: \$700,000.
 - 7) Bimolecular Interaction Technology Center Grant (University of New Hampshire). "Applications of Atomic Force Microscopy for the analysis of biomolecular interactions", funding period 07/01/2004-06/30/2006, amount \$100,000.
22. Editorial responsibilities:
reviewed paper for: Biophysical Journal, Colloid & Surfaces, Biochemistry, Journal of Computational Chemistry, Journal Cell Science, Langmuir, J. Am. Chemical Soc. ,J. Chemical Physics and Science.
23. Professional and Honorary Organizations:
Biophysical Society, American Chemical Society and American Society for Cell Biology
24. Honors and Awards:
- 1) Phi Beta Delta, Honor Society for International Scholars, 1997.
 - 2) Procter-Gamble Award in Physical Chemistry, presented by the ACS, 1987.
 - 3) Phi Beta Kappa, University of Pennsylvania, 1984.
 - 4) Summa Cum Laude, University of Pennsylvania, 1984
 - 5) Junior Faculty Laboratory Research Award, University of Miami, 2000.
 - 6) Robert J. Boucek, MD Research Award, American Heart Association, 2003.
25. Post-doctoral Fellowships: None
26. Other Professional Activities: None

Invited Talks

- 1) National Meeting of the American Chemical Society, New Orleans, LA, 1987.
- 2) Biophysics Seminar, Tech. Universität München, Garching, Germany, July, 1993.
- 3) European Meeting of Scanning Probe Microscopies and Organic Material, Mainz, Germany, October 11, 1993.
- 4) Max-Planck-Institute für Biophysik, Frankfurt, Germany, May 5, 1994.
- 5) Scanning Microscopy 1994 Meeting, Toronto, Canada, May 7-12, 1994.
- 6) NATO-Advanced Research Workshop on "Scanning Probe Microscopies and Molecular Materials", Schloß Ringberg, Rottach-Egern, Germany, May, 1994.
- 7) Gordon Research Conference on "Biomolecular Recognition and Immobilization", Wolfeboro, NH, August 7-12, 1994.
- 8) SPIE Conference; "Scanning Probe Microscope III", San Jose, CA, February, 1995.
- 9) Scanning 98, Baltimore, MD, May 9-12, 1998.
- 10) University of Illinois at Champaign-Urbana, Department of Physics, May, 1999.
- 11) American Society for Cell Biology Annual Meeting, Washington, DC, December, 1999.
- 12) Duke University, Dept. of Biomedical Engineering, January, 2000.

- 13) University of Southern California, Dept. of Physiology & Biophysics, May, 2001.
- 14) Nanobioscience Symposium, Wayne State University, May, 2002.
- 15) Pusan National Univ., Asian Inst. of Nanobio Science and Technology, Nov., 2003
- 16) V. Annual Linz Winter Workshop, Linz, Austria, February, 2003.
- 17) Beijing-TEDA 2004, Beijing, China, May, 2004.
- 18) EMBO/FEBS Workshop on AFM Applications in Biology, Lisbon, Portugal, July, 2004.
- 19) Microscopy and Microanalysis 2004, Savannah, GA, August, 2004.
- 20) Texas A&M University, Dept. of Physiology, Sept., 2004.
- 21) 2005 Ernest E. Just Symposium, Medical University of South Carolina, Feb., 2005

Miscellaneous

Co-inventor of a soluble form of murine Intercellular Adhesion Molecule-1 (ICAM-1), currently licensed to Endogen.

TEACHING

- 47) Teaching Awards Received: None
- 48) Teaching Specialization:

Formal lectures and conferences

- 1) Lecturer and conference leader in “Neurophysiology”, University of Miami School of Medicine, 1997-present
 - 2) Conference leader in “Systemic Physiology”, University of Miami School of Medicine, 1996-present.
 - 3) Conference leader in “Cellular Physiology”, University of Miami School of Medicine, 1997-present.
 - 4) Honors Conference Coordinator for “Neurophysiology” and “Systemic Physiology” 1999-present.
 - 5) Course Coordinator for “Respiratory Physiology” 2002-present.
 - 6) Course Coordinator for “Neurophysiology” 2003-present.
 - 7) Instructor for PHY680 “Directed Reading”
- 49) Thesis and Dissertation Advising/Postdoctoral Fellow Supervision

Graduate students supervised

- 1) Markus Schmidt (Technical University of Munich), 1995-1996.
- 2) Stefan Sutter (Technical University of Munich), 1995-1996.
- 3) Thomas Hillmann (Technical University of Munich), 1995-1996.
- 4) Torge Kuhn (Technical University of Munich), 1995-1996.
- 5) Pamela Kolb (University of Munich), 1996-1997.

- 6) Ivan Benitez, 1999-2001.
- 7) Melanie Ruano, 1999-2000.
- 8) Xiaohui Zhang, 2000-2003.
- 9) Ewa Wojcikiewicz, 2000-2004.
- 10) Feiya Li, 2001-2004.
- 11) Daniela Bogorin, 2003-2004.
- 12) Midhat Abdulreda 2003-present.

Postdoctoral fellows supervised

- 1) Dr. Yuekan Jiao, 1996-1999.
- 2) Dr. Hongwei Wu, 1996-1998.
- 3) Dr. Chunbo Yuan, 1997-1998.
- 4) Dr. Aileen Chen, 1998-2002.
- 5) Dr. Xiaohui Zhang, 2003-2004.
- 6) Dr. Robert Eibl, 2003-2004.
- 7) Dr. Ewa Wojcikiewicz, 2004-present

Thesis committee

- 1) Lynell Martinez (Physiology & Biophysics)
- 2) Ying Wang (Physiology & Biophysics)
- 3) Deepali Verma (Chemistry)
- 4) Miodrag Micic (Chemistry)
- 5) Yang Qu (Physiology & Biophysics)
- 6) Tinatin Brelidze (Physiology & Biophysics)
- 7) Gayathri Venkatraman (Physiology & Biophysics)
- 8) Xiang Qian (Physiology & Biophysics)
- 9) Feiya Li (Physiology & Biophysics)
- 10) Ewa Wojcikiewicz (Physiology & Biophysics)
- 11) Xiaohui Zhang (Physiology & Biophysics)
- 12) Yuanli Duan (Physiology & Biophysics)
- 13) Ma Meiyun (Physiology & Biophysics)

SERVICE

30. University Committee and Administrative Responsibilities:

- 1) Scientific Awards Committee, 2004-present
- 2) Departmental Library Committee, 1998-present.
- 3) Graduate Studies Committee, 2001-present.
- 4) IBS Admission Committee, 2003-present.

- 5) Administered graduate student qualifying examination, 1998 -present
- 6) Faculty Evaluation Committee, 1996
- 7) Reviewer for Department of Technology Transfer, 1999
- 8) Graduate Study Committee, 2000-present
- 9) Scientific Awards Committee, 2004-present.
- 10) Reviewer for Federal Granting Agencies
 - American Heart Association/Florida/Puerto Rico Affiliate Research Committee, 2003-pres.
 - American Heart Association National Peer Review Committee Member, 2003-pres.
 - NIH Review Panel member for P41, 2003
 - DOE Genomes to Life, 2003
 - NIH ZRG1SSS-1 04 S (Shared Instrumentation Study Section Member) 1999-pres.
 - NIH ad hoc reviewer (BBCB Study Section), 1998.
 - NSF ad hoc reviewer, 1997.