

---

## BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2.  
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

---

NAME Alan D. Marmorstein	POSITION TITLE Associate Professor		
eRA COMMONS USER NAME			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
State University of New York at Albany, Albany, N.Y.	B.S.	1985	Cell Biology
State University of New York, Health Science Center at Brooklyn, Brooklyn, N.Y..	Ph. D.	1994	Cell Biology
Cornell University Medical College, Depts of Ophthalmology and Cell Biology and Anatomy	Post-doctoral	1994-1998	Cell Biology / Vision science

### A. Positions and Honors.

#### Positions and Employment

- 1998-1999 Senior Research Biochemist, Merck & Co., Inc., Merck Research Laboratories, Department of Human Genetics
- 1999-2003 Assistant Staff, Cole Eye Institute, Department of Ophthalmology and Department of Cell Biology, Lerner Research Institute The Cleveland Clinic Foundation
- 2003-present Associate Professor (tenured), Department of Ophthalmology and Vision Science, College of Medicine, University of Arizona
- 2004-present Associate Professor, University of Arizona Optical Sciences Center

#### Other Experience:

- 2001 External Reviewer – Veterans Administration
- 2001 External Referee –The Netherlands Organization for Scientific Research (CMHR)
- 2001, 2003 Ad Hoc member NIH Special Emphasis Panel SSS-P
- 2001 – 2005, 2007 Ad Hoc member NIH, Biology and Diseases of the Posterior Eye (formerly VisC)
- 2002 Reviewer - The Medical Research Council (United Kingdom)
- 2002 Chairman and Ad Hoc Member NIH ZEY1 VSN (6) Study Section
- 2002 – 2005 ARVO Retinal Cell Biology Program Planning Committee
- 2003 – 2004, 2007 Reviewer – Phillip Morris External Research Program
- 2002 – 2005 Reviewer - The Wellcome Trust (United Kingdom)
- 2003 - 2005 Chairman, ARVO Working Group on Research Tissue Acquisition
- 2004 Reviewer – Natural Sciences and Engineering Council of Canada
- 2004 – 2007 Member, ARVO Advocacy committee
- 2005 Reviewer – Isreali Science Foundation
- 2005 Ad Hoc member NIH ZEY1 VSN (06), and NIH ZRG1 CB-G 90S study sections
- 2005 - pres. Member, Scientific Advisory Board, International Association Fighting Best Disease
- 2006 Veterans Administration Rehabilitation Research Review Panel, Sensory, Vision.
- 2005, 2007 Ad Hoc Member, NIH Special Emphasis Panel ZRG1 F05-J (20)
- 2007-pres. Editorial Board Member, Open Ophthalmology Journal

## B. Select publications.

1. Marmorstein, A. D., V. L. Bonilha, S. Chiflet, J. M. Neill, and E. Rodriguez-Boulan. The polarity of the plasma membrane protein RET-PE2 in retinal pigment epithelium is developmentally regulated. *J. Cell Sci.*, 109(13): 3025-3034, 1996
2. Finnemann, S. C., A. D. Marmorstein, J. M. Neill, and E. Rodriguez-Boulan. Identification of the retinal pigment epithelium protein RET-PE2 as CE-9/Ox-47, a member of the immunoglobulin superfamily. *Invest. Ophthalmol. Vis. Sci.*, 38(11):2366-2374, 1997.
3. Finnemann, S. C., V. L. Bonilha, A. D. Marmorstein, and E. Rodriguez-Boulan. Phagocytosis of rod outer segments by retinal pigment epithelial cells requires  $\alpha v \beta 5$  integrin for binding but not internalization. *Proc. Natl. Acad. Sci.*, 94:12934-12937, 1997
4. Marmorstein, A. D., C. Zurzolo, A. Le Bivic, and E. Rodriguez-Boulan. Cell surface biotinylation techniques and determination of protein polarity. In: *Cell Biology: A Laboratory Handbook*, 2nd Edition, J. Celis (Ed.), Academic Press, N. Y., Vol. 4: 341-350, 1998
5. Marmorstein, A. D., Y. C. Gan, V. L. Bonilha, S. C. Finnemann, and E. Rodriguez-Boulan. Apical polarity of N-CAM and EMMPRIN in retinal pigment epithelium resulting from suppression of basolateral signal recognition. *J. Cell Biol.* 142(3):697-710, 1998
6. Marmorstein, A. D., S. C. Finnemann, V. L. Bonilha, and E. Rodriguez-Boulan. Morphogenesis of the Retinal Pigment Epithelium: Towards Understanding Retinal Degenerative Disease. *Annals. N.Y. Acad. Sci* 857:1-12, 1998
7. Dunn, K. C., A. D. Marmorstein, V. L. Bonilha, E. Rodriguez-Boulan, F. Giordano, and L. M. Hjelmeland. Use of ARPE-19 cells as a model for the study of RPE polarity: Basolateral secretion of FGF-5. *Invest. Ophthalmol. Vis. Sci.* 39(13):2744-2749, 1998 (*first and second authors contributed equally*)
8. Mora, R., V. L. Bonilha, A. Marmorstein, P. E. Scherer, D. Brown, M. P. Lisanti, and E. Rodriguez-Boulan. Caveolin-2 localizes to the Golgi complex but redistributes to plasma membrane, caveolae and rafts when co-expressed with caveolin-1. *J. Biol. Chem.* 274(36):25708-25717, 1999
9. Chen, F., D. Figueroa, A. D. Marmorstein, Q. Zhang, K. Petrukhin, C. T. Caskey, and C. Austin,. Identification of a novel retina specific nuclear receptor (RNR) expressed in the retinal pigment epithelium and Muller glial cells. *Proc. Natl. Acad. Sci.* 96(26): 15149-15154, 1999
10. Krietzler, G., A. Marmorstein, P. Okamoto, R. Vallee, and E. Rodriguez-Boulan. Disruption of kinesin and dynamin activities inhibits the post-Golgi transport of a plasma membrane protein in vivo. *Nature Cell Biology* 2(2):125-127, 2000
11. Marmorstein A. D., K. G. Csaky, J. Baffi, L. Lam, F. Rahal, and E. Rodriguez-Boulan. Saturation of, and competition within an apical secretory pathway. *Proc. Natl. Acad. Sci.* 97(7):3248-3253, 2000
12. Marmorstein, A. D., Marmorstein, L. Y., M. Rayborn, X. Wang, J. G. Hollyfield, and K. Petrukhin. Bestrophin, the product of the Best Vitelliform macular dystrophy gene (VMD2), localizes to the basolateral plasma membrane of the retinal pigment epithelium. *Proc. Natl. Acad. Sci.* 97(23):12758-12763, 2000
13. Marmorstein, A. D., We've got the gene so where is the cure? In: *Review of Ophthalmology*, Jobson Publishing, Newtown Square, PA, pg.68, October 2000.
14. Hoppe, G., A. D. Marmorstein, E. A. Pennock, and H. F. Hoff. Oxidized low density lipoprotein-induced inhibition of processing of photoreceptor outer segments by RPE. *Invest. Ophthalmol. Vis. Sci.* 42: 2714-2720, 2001.
15. Hoppe, G., L. Y. Marmorstein, and A. D. Marmorstein, Localization and Functional Analysis of Bestrophin, In: *New Insights into Retinal Degenerative Diseases*. Eds. R. Anderson, J. G. Hollyfield, and M. LaVail. Kluwer Academic/Plenum Publishers, pp207-216, 2001
16. West, K., L. Yan, M. Miyagi, J. S. Crabb, A. D. Marmorstein, L. Y. Marmorstein, and J. W. Crabb.

- Proteome analysis of differentiated and undifferentiated rat RPE-J cells. *Exp. Eye Res.* 73(4):479-491, 2001
17. Marmorstein, A. D., The Polarity of the Retinal Pigment Epithelium. *Traffic* 2(12):867-872, 2001
  18. Marmorstein, A. D., L. Y. Marmorstein, H. Sakaguchi, and J. G. Hollyfield. Spectral profiling of drusen, lipofuscin, and Bruch's membrane associated autofluorescence in normal and AMD eyes. *Investigative Ophthalmology and Visual Science*, 43(7):2435-2441, 2002
  19. Marmorstein, L. Y., P. McLaughlin, J. B. Stanton, L. Yan, J. W. Crabb, and A. D. Marmorstein, Bestrophin interacts physically and functionally with protein phosphatase 2A. *J. Biol. Chem.* 277: 30591-30597, 2002
  20. Marmorstein, L. Y., F. L. Munier, Y. Arsenijevic, D. F. Schorderet, P. J. McLaughlin, D. Chung, E. Traboulsi, and A. D. Marmorstein. Aberrant Accumulation of EFEMP1 Linked to the Retinal Pathology in Malattia Leventinese and Age-Related Macular Degeneration. *Proc. Natl. Acad. Sci.* 99(20):13067-13072, 2002
  21. Low, S. H., L. Y. Marmorstein, M. Miura, X. Li, N. Kudo, A. D. Marmorstein, and T. Weimbs. Retinal pigment epithelial cells exhibit unique expression and localization of plasma membrane syntaxins which may contribute to their trafficking phenotype. *J. Cell Sci.* 115: 4545-4553, 2002
  22. Peachy, N., J. B. Stanton, and A. D. Marmorstein. Response characteristics of the rat DC-electroretinogram. *Vis. Neurosci.* 19(6):693-701, 2002
  23. West K. A., L. Yan, K. Shadrach, J. Sun, A. Hasan, M. Miyagi, J. S. Crabb, J. G. Hollyfield, A. D. Marmorstein, and J. W. Crabb. Proteome Database: Human Retinal Pigment Epithelium. *Molecular and Cellular Proteomics*, 2(1):37-49, 2003
  24. Marmorstein, A. D., N. Peachey, and K. G. Csaky. In vivo gene transfer as a means to study the physiology and morphogenesis of the retinal pigment epithelium in the rat. (invited manuscript) *Methods.* 30(3):277-285, 2003
  25. Bakall, B., L. Y. Marmorstein, G. Hoppe, N. S. Peachey, C. Wadelius, and A. D. Marmorstein. Expression and localization of bestrophin during normal mouse development. *Invest. Ophthalmol. Vis. Sci.* 44(8):3622-3628, 2003
  26. Wu, J., N. S. Peachey, J. Lem, and A. D. Marmorstein. Light-Evoked Responses of the Mouse Retinal Pigment Epithelium, *J. Neurophys.* 91:1134-1142, 2004
  27. Wu, J., A. D. Marmorstein, P. Kofuji, and N. S. Peachey. Role of Kir4.1 in the Mouse Electroretinogram. *Mol. Vis.* 10:650-654, 2004
  28. Marmorstein, A. D., J. B. Stanton, J. Yocom, B. Bakall, M. Schiavone, C. Wadelius, L. Y. Marmorstein, N. S. Peachey. A Model of Best Vitelliform Macular Dystrophy in Rats. *Invest. Ophthalmol. Vis. Sci.* 45(10):3733-3739, 2004.
  29. Ami Deora, Samit Chatterjee, Alan D. Marmorstein, Chiara Zurzolo, Andre Le Bivic, and Enrique Rodriguez-Boulan, Cell Surface Biotinylation and Other Techniques for Determination of Surface Polarity of Epithelial Monolayers. In: *Cell Biology: A Laboratory Handbook*, 3rd Edition, J. Celis (Ed.), Academic Press, N. Y., 2005
  30. Quansheng Xi, Gayle J. T. Pauer, Alan D. Marmorstein, John W. Crabb and Stephanie A. Hagstrom, Tubby-like Protein 1 (TULP1) Interacts with F-Actin in Photoreceptor Cells. *Invest. Ophthalmol. Vis. Sci.* 46(12):4754-4761, 2005
  31. Rosenthal, R., B. Bakall, T. Kinnick, N. Peachey, S. Wimmers, C. Wadelius, A. D. Marmorstein, and O. Strauss. Expression of bestrophin-1, the product of the VMD2 gene, modulates voltage-dependent Ca<sup>2+</sup> channels in retinal pigment epithelial cells. *FASEB J.*, 20(1):178 2006
  32. McLaughlin, P. J., Qiuyun Chen, Masahito Horiguchi, Barry C. Starcher, J. B. Stanton, Thomas J. Broekelmann, Alan D. Marmorstein, Brian McKay, Robert Mecham, Tomoyuki Nakamura, and L. Y. Marmorstein. Targeted Disruption of Fibulin-4 Abolishes Elastogenesis and Causes Perinatal Lethality in Mice. *Mol. Cell. Biol.* 26: 1700-1709. 2006

33. Marmorstein, L. Y., J. Wu, P. McLaughlin, J. Yocom, A. Yocom, M. O. Karl, R. Neussert, S. Wimmers, J. B. Stanton, R. G. Gregg, O. Strauss, N. S. Peachey, and Alan D. Marmorstein, The light peak of the electroretinogram is dependent on voltage gated calcium channels and antagonized by bestrophin (best-1). *J. Gen. Physiol.* 127(5):577-589, 2006
34. Stanton, J. B., A. F. X. Goldberg, G. Hoppe, L. Y. Marmorstein, and A. D. Marmorstein, Hydrodynamic Analysis of Bestrophin-1 in Triton X-100. *Biochim. Biophys. Acta – Biomembranes*, 1758(2):241-247, 2006
35. Wu, J., A. D. Marmorstein, and N. S. Peachey. Contribution of CFTR to the Mouse Electroretinogram. *Exp. Eye Res.*, 83(2):424-428, 2006
36. Curcio, C.A., and the Tissue Acquisition Working Group. Declining Human Eye Tissues for Research (*editorial*). *Invest. Ophthalmol. Vis. Sci.* 47(7):2747-2749, 2006
37. Marmorstein, A. D., and L. Y. Marmorstein, The Challenge of Modeling Macular Degeneration in Mice. *Trends in Genetics*, 23(5):225-231, 2007
38. Wu J., A. D. Marmorstein, J. Striessnig, and N. S. Peachey. Voltage-Dependent Calcium Channel  $Ca_v1.3$  Subunits Regulate the Light Peak of the Electroretinogram. *J. Neurophysiol.* 97:3731-3735, 2007
39. Bakall, B., R. Radu, J. B. Stanton, J. M. Burke, B. S. McKay, C. Wadelius, R. Mullins, E. Stone, G. H. Travis, and A. D. Marmorstein, Enhanced accumulation of A2E in individuals homozygous or heterozygous for mutations in BEST1 (VMD2). *Exp. Eye Res.* 85:34-43, 2007
40. Marmorstein L. Y., P. J. McLaughlin, N. Peachey, T. Sasaki, and A. D. Marmorstein. Formation and Progression of Sub-Retinal Pigment Epithelium Deposits in EFEMP1 R345W Knock-in Mice: The Early Pathogenic Course of Macular Degeneration. *Human Molecular Genetics* 16: 3423-3432, 2007.
41. Marmorstein, A. D., and T. R. Kinnick, Focus on Molecules: Bestrophin (Best-1). *Exp. Eye. Res.* 85:423-424, 2007.
42. McLaughlin, P. J., B. Bakall, J. Choi, Z. Liu, T. Sasaki, E. C. Davis, A. D. Marmorstein, and L. Y. Marmorstein. Early Aging and Herniation in Mice Lacking Fibulin-3. *Human Molecular Genetics*, 16(24):3059-3070, 2007
43. B. Bakall, P.J. McLaughlin, J. B. Stanton, Y. Zhang, H. C. Hartzell, L. Y. Marmorstein and A. D. Marmorstein. Bestrophin-2 is involved in the generation of intraocular pressure. *Invest. Ophthalmol. Vis. Sci. In Press*