

Curriculum Vitae

Negin P. Martin, Ph.D.
Director of the Viral Vector Core

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Education

- 10/1998 - 03/2001 Ph.D. in Biochemistry, School of Medicine and Dentistry, University of Rochester, Rochester, NY
Ph.D. Thesis Title: Intramolecular Interactions among Transmembrane Regions of *STE2*, a G Protein Coupled Receptor in Yeast *Saccharomyces cerevisiae*
- 09/1995 - 10/1998 M.S. in Biochemistry, School of Medicine and Dentistry University of Rochester, Rochester, NY
- 09/1992 - 05/1995 B.S. in Biochemistry, SUNY College at Geneseo, Geneseo, NY
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Professional Positions

- 10/2018 – Present Staff Scientist, NIEHS-National Institute of Health, RTP, NC
Director, Viral Vector Core
- Manage day-to-day activities of the core
 - Supervise the Viral Vector Core staff
 - Provide consultation and technical expertise in the design implementation, analysis, interpretation, and trouble-shooting of viral applications in research
 - Import, optimize, and validate viral technology
 - Implement guidelines and policies for viral production and safe use of viruses in the Viral Vector Core
 - Perform and train staff and new users in biochemical techniques
 - Collaborate with the NIEHS Health and Safety to promote safe use and handling of viruses in research
- 06/2016 – 10/2018 Biologist, NIEHS-National Institute of Health, RTP, NC
Acting Director, Viral Vector Core
- Manage day-to-day activities of the core
 - Supervise the Viral Vector Core staff
 - Provide consultation and technical expertise in the design implementation, analysis, interpretation, and trouble-shooting of viral applications in research
 - Import, optimize, and validate viral technology
 - Implement guidelines and policies for viral production and safe use of viruses in the Viral Vector Core
 - Perform and train staff and new users in biochemical techniques
 - Collaborate with the NIEHS Health and Safety to promote safe use and handling of viruses in research

- 05/2009 – 06/2016 Biologist, NIEHS-National Institute of Health, RTP, NC
Viral Vector Core
- Supervise the Viral Vector Core staff
 - Provide consultation and technical expertise in the design implementation, analysis, interpretation, and trouble-shooting of viral applications in research
 - Import, optimize, and validate viral technology
 - Implement guidelines and policies for viral production and safe use of viruses in the Viral Vector Core
 - Perform and train staff and new users in biochemical techniques
- 07/2008 – 05/2009 Research Fellow, NIEHS-National Institute of Health, RTP, NC
Mentor: Dr. David L. Armstrong
- Completion of projects mentioned in the section below.
- 07/2005 – 07/2008 IRTA Fellow, NIEHS-National Institute of Health, RTP, NC
Mentor: Dr. David L. Armstrong
- Determining the molecular mechanism responsible for rapid cytoplasmic signaling of thyroid hormone receptor via PI3 Kinase
 - Functional effects of K897T polymorphism on human Erg1 Channel, collaborative project with Dr. Saverio Gentile
 - Identifying phosphorylation sites in human Erg1 Channel and the thyroid hormone receptor that may regulate and modulate channel function
 - Collaborative project to determine mechanism of Rac GTPase signaling through the PP5 phosphatase
- 09/2003 – 07/2005 IRTA Fellow, NIEHS-National Institute of Health, RTP, NC
Mentor: Dr. John O'Bryan
- Role of scaffold protein Intersectin in epidermal growth factor ubiquitylation, degradation, and endocytosis
 - Collaborative projects to determine the role of Intersectin in regulation of neuronal survival and Huntington Disease aggregates
- 05/2001 – 09/2003 Postdoctoral Fellow, Duke University Medical Center, Durham, NC
Mentor: Dr. Robert J. Lefkowitz
- Studying PKA-mediated phosphorylation of the beta1-adrenergic receptor that promotes Gs/Gi switching and its downstream pathways
 - Role of ubiquitination in V2 vasopressin receptor degradation and trafficking
- 09/1995 – 3/2001 Graduate Student, Teaching Assistant (1 year), School of Medicine and Dentistry, University of Rochester, Rochester, NY
Mentor: Dr. Mark E. Dumont
- Mutational analysis of the alpha-factor receptor, a G protein-coupled receptor encoded by the *STE2* gene of the yeast *Saccharomyces cerevisiae*, to identify intramolecular interactions, dominant negative and constitutively active mutants
- 01/1994 – 08/1995 Research Assistant, Fison Pharmaceuticals/Astra Pharmaceuticals*, Rochester, NY
- Toxicological studies of cholecystokinin in rodents and canine tissue

* Fison Pharmaceuticals Research and Development Plant in Rochester, NY was acquired by Astra Pharmaceuticals during my employment.

- Assisting in necropsies
- Cholecystokinin binding assays on human donor tissues, harvested rodent and canine tissue, and cultured cells

Honors, Awards, and Activities

- Member of the American Society for Virology (ASV)
- Member of the American Society of Gene & Cell Therapy (ASGCT)
- Member of the American Association for the Advancement of Science (AAAS)
- Member of the *PLOS ONE* editorial board and member of the Heliyon editorial advisory board
- Ad hoc Reviewer for *Environmental Health Perspective, PLOS ONE, Microorganisms, Heliyon, Viruses, Vaccines, Cell Signaling, Pathogens, Current Pharmaceutical Biotechnology, Virology, Cytotechnology, Biochemistry, and Molecular Diagnosis & Therapy*
- Published invited review articles in *Current Protocols* (book chapters)
- Member of the NIEHS Diversity Speaker Series Interest Group since 2018-2021
- Member of the NIEHS Institutional Biosafety Committee, 2016-2020
- Member of the NIEHS Committee on Promotion III, 2016-2019
- Member of the NIEHS Award Committee, 2018-present
- Member of the NIEHS Science Day Committee, 2018-present
- Member of the NIEHS Quality Assurance Committee, 2013-2014
- Member of the NIEHS Scholar Connect Program Advisory Group, 2015-present
- Member of the NIEHS Mass Spectrometry Advisory Group, 2018-present
- Served on the NIEHS Assembly of the Laboratory Staff Council from 2015-2018 as the elected President, President, and past President
- Recipient of 2009 Science Communication Fellowship from Environmental Health Sciences, contribution of over 30 articles/communications
- Invited guest speakers at the SHE (Share, Hear, Empower) luncheon at the Duke University
- Training over 40 NIEHS employees and trainees from 2009-present
- Employee Invention Report at the NIEHS: Cell line E-224-2015 (50%), 2017
- Recipient of Fellows Award for Research Excellence (FARE) 2004 and 2007, NIEHS
- Recipient of 2001 Walter S. Bloor award for outstanding Ph.D. candidate in Biochemistry, University of Rochester, New York
- Recipient of Elon-Huntington Hooker Graduate Research Fellowship Award, June 1999-June 2000, University of Rochester, New York
- Founder and co-owner, member of the board of the Websourced company from 1998-2003, web hosting and search engine placement services, small company with 40 employees, IPO in 2003

Publications

1. Alexander C.Y. Foo, Peter M. Thompson, Shih-Heng Chen, Ramesh Shambanna, Brianna Lupo, Eugene F. DeRose, Simrat Arora, Victoria C. Placentra, Prem Lakshmanane, Lalith Perera, Lars C. Pedersen, **Negin Martin**, Geoffrey A. Mueller (2021) The mosquito protein AEG12 displays both cytolytic and antiviral properties via a common lipid transfer mechanism. *Proc. Natl. Acad. Sci. U.S.A.*, March 16, 2021 118 (11) e2019251118. doi: 10.1073/pnas.2019251118

2. Gabrielle Childers, Caroline Perry, Barbara Blachut, **Negin Martin**, Carl Bortner, Stella Seiber, Jian-Liang Li, Michael Fessler, G. Jean Harry (2021) Examination of select mitotoxic organotin compounds to induce inflammation in cultured macrophages via inflammasome activation and altered mitochondrial function. *Environmental Health Perspectives*, v. 129 (4): e47015. doi:10.1289/EHP8314.
3. Thomas J. Esparza, **Negin P. Martin**, George P. Anderson, Ellen R. Goldman, David L. Brody (2020) High Affinity Nanobodies Block SARS-CoV-2 Spike Receptor Binding Domain Interaction with Human Angiotensin Converting Enzyme. *Scientific Reports*, December 2020, 10:22730. doi:10.1038/s41598-020-79036-0
4. Christine Bowen, Gabrielle Childers, Caroline Perry, **Negin Martin**, Christopher A. McPherson, Tatlock Lauten, Janine Santos, G. Jean Harry (2020) *In vitro* mitochondrial-related effects of pentabromophenol, tetrabromobisphenol A, and triphenyl phosphate on murine BV-2 microglia cells. *Chemosphere* volume 255, September 2020, 126919. doi: 10.1016/j.chemosphere.2020.126919
5. Yin Li, Katherine J. Hamilton, Tianyuan Wang, Lalith Perera, Artiom Gruzdev, Tanner B. Jefferson, Austin X. Zhang, Emilie Mathura, Kevin E. Gerrish, Laura Wharey, **Negin P. Martin**, Jian-Liang Li, and Kenneth S. Korach (2020) ESR1 mutants associated with Estrogen Insensitivity Syndrome result in whole transcriptome aberration and ER α confirmation changes. *Endocrinology*. Apr 2. pii: bqa050. doi: 10.1210/endo/bqa050
6. Shih-Heng Chen, Amy Papaneri, Mitzie Walker, Erica Scappini, Robert Keys, and **Negin Martin** (2020) Two-Step Small Scale Purification of Recombinant Adeno-Associated Viruses. *Journal of Virological Methods*. volume 281, July 2020, 113863. doi: 10.1016/j.jviromet.2020.113863
7. Charles Romeo, Shih-Heng Chen, Eugenia Goulding, Lucas Van Gorder, Maura Schwartz, Mitzie Walker, Greg Scott, Erica Scappini, Manas Ray, and **Negin Martin** (2020) AAVs Diffuse across Zona Pellucida for Effortless Gene Delivery to Fertilized Eggs. *Biochemical and Biophysical Research Communications* 526 pp. 85-90. doi: 10.1016/j.bbrc.2020.03.026
8. Chen, S.-H., Haam, J., Walker, M., Scappini, E., Naughton, J., & **Martin, N. P.** (2019) Recombinant viral vectors as neuroscience tools. *Current Protocols in Neuroscience*, e67. doi: 10.1002/cpns.67
9. Chen, S.-H., Haam, J., Walker, M., Scappini, E., Naughton, J., & **Martin, N. P.** (2019) Production of viral constructs for neuroanatomy, calcium imaging, and optogenetics. *Current Protocols in Neuroscience*, e66. doi: 10.1002/cpns.66
10. **Martin NP**, P Myers, E Goulding, S-H Chen, M Walker, TM Porter, L Van Gorder, A Mathew, A Gruzdev, E Scappini and C Romeo (2018) Laser-assisted Lentiviral Gene Delivery to Mouse Fertilized Eggs. *JoVE* v. (141). doi: 10.3791/58327
11. **Negin Martin**, Page Myers, Eugenia Goulding, Shih-Heng Chen, Mitzie Walker, Thomas M. Porter, Lucas Van Gorder, Amanda Mathew, Artiom Gruzdev, and Charles Romeo (2018) *En Masse* lentiviral gene delivery to mouse fertilized eggs via laser perforation of zona pellucida. *Transgenic Res.*, Volume 27, Issue 1, pp 39–49. doi:10.1007/s11248-017-0056-8

12. Teng CT, JH Hsieh, J Zhao, R Huang, M Xia, **N Martin**, X Gao, D Dixon, SS Auerbach, KL Witt and BA Merrick (2017) Development of Novel Cell Lines for High-Throughput Screening to Detect Estrogen-Related Receptor Alpha Modulators. *SLAS Discov.* v. 1, Jan 1:2472555216689772. doi:10.1177/2472555216689772
13. Jane Greenberg, Angela Murillo, Adrian Ogletree, Rebecca Boyles, **Negin Martin**, Charles Romeo (2014) Metadata Capital: Automating Metadata Workflows in the NIEHS Viral Vector Core Laboratory. *Metadata and Semantics Research*. Communications in Computer and Information Science, Volume 478, pp 1-13
14. **Martin, NP**, de Velasco, EMF, Mizuno, F, Scappini, EL, Gloss, B, Erxleben, C, Williams, JG, Stapleton, HM, Gentile, S and Armstrong, DL (2014) A Rapid Cytoplasmic Mechanism for PI3 Kinase Regulation by the Nuclear Thyroid Hormone Receptor, TR beta, and Genetic Evidence for Its Role in the Maturation of Mouse Hippocampal Synapses In Vivo. *Endocrinology*. v. 155 (9): pp. 3713-3724. doi: 10.1210/en.2013-2058
15. Christina T Teng, Burton Beames, B Alex Merrick, **Negin P. Martin**, Charles Romeo, Anton M Jetten (2014) Development of a stable cell line with an intact PGC-1 α /ERR α axis for screening environmental chemicals. *Biochem Biophys Res Commun*. 444(2):177-81. doi: 10.1016/j.bbrc.2014.01.033
16. Katy A. Wong, Jessica Wilson, Angela Russo, Li Wang, Mustafa Nazir Okur, Xuerong Wang, **Negin P. Martin**, Erica Scappini, Graeme K. Carnegie1, and John P. O'Bryan (2012) Intersectin (ITSN) family of scaffolds function as molecular hubs in protein interaction networks. *PLOS ONE*. 7906-7917. doi.org/10.1371/journal.pone.0036023
17. Saverio Gentile*, **Negin Martin***, Erica Scappini, Peter Smutko, Jason Williams, Christian Erxleben, and David Armstrong (2008) The human ERG1 channel polymorphism, K897T, creates a phosphorylation site that inhibits channel activity. *Proc. Natl. Acad. Sci. U.S.A.* 105 (38) 14704-14708. Doi: 10.1073/pnas.0802250105
Both authors contributed equally.
18. Margaret Das, Erica Scappini, **Negin P. Martin**, Katy A. Wong, Sara Dunn, Yun-Ju Chen, Stephanie L. H. Miller, Jan Domin, and John P. O'Bryan (2007) Regulation of Neuron Survival Through an Intersectin (ITSN)- Phosphoinositide 3'-Kinase-C2beta-AKT Pathway. *Mol. Cell. Biol.* 7906-7917
19. Scappini, E., Koh, T., **Martin, N.P.**, and O'Bryan, J. P. (2007) Intersectin enhances Huntington Aggregation and neurodegeneration through activation of c-Jun-NH2 terminal kinase (JNK). *Hum. Mol. Genet.* 16 (15): 1862-71
20. **Martin, N.P.**, Mohny, R.P., Das, M., Scapinni, E., Adams, A.G., and John P. O'Bryan (2006) Intersectin regulates epidermal growth factor ubiquitylation, degradation, and endocytosis. *Mol. Pharmacol.* 70 (5): 1643-53
21. Floren, A. , Sollenberg, U., Lundstrom, L., Zorko, M., Stojan, J., Budihna, M., Wheatly, M., **Martin, N.P.**, Kilk, K., Mazarati, A., Bartfai, T., Lindgren, M., Langel, U. (2005) Multiple interaction sites of galnon trigger its biological effects. *Neuropeptides*. 39 (6): 547-58

22. Gentile, S., Darden, T., Erxleben, C., Romeo, C., Russo, A., **Martin, N.P.**, Rossie, S., and Armstrong, D. (2005) Rac GTPase Signaling Through the PP5 Protein Phosphatase. *Proc. Natl. Acad. Sci. U.S.A.* 103 (13) 5202-5206
23. **Martin, N.P.**, Whalen E.J., Zamah, M.A., Pierce K.L, and Lefkowitz, R.J. (2004) PKA-mediated phosphorylation of the β 1-adrenergic receptor promotes Gs/Gi switching. *Cell Signal.* 16 (12): 1397-403
24. Celic, A., Connelly, S.M., **Martin, N.P.**, and Dumont, M.E. (2004) Intensive Mutational Analysis of G Protein Coupled Receptors in Yeast, in G Proteins and Their Receptors. *Methods in Molecular Biology*, 237:105-120
25. **Martin, N.P.**, Lefkowitz, R.J., and Shenoy, S.K. (2003) Regulation of V₂ vasopressin receptor degradation by agonist promoted ubiquitination. *J. Biol. Chem.* 278(46): 45954-9
26. Hu, L.A., Chen, W., **Martin, N.P.**, Whalen, E.J., Premont, R., and Lefkowitz, R.J. (2003) GIPC interacts with the beta 1-adrenergic receptor mediated ERK activation. *J. Biol. Chem.* 278(28): 26295-301
27. Celic, A., **Martin, N.P.**, Son, C.D., Becker, J.M., Naider, F., and Dumont, M.E. (2003) Sequences in the intracellular loops of the yeast pheromone receptor Ste2p required for G protein activation. *Biochemistry* 42: 3004-3017
28. **Martin, N.P.**, Celic, A., and Dumont, M.E. (2002) Mutagenic mapping of helical structures in the transmembrane segments of the yeast alpha-factor receptor. *J. Mol. Biol.* 317(5):765-788
29. Sommers, C.M., **Martin, N.P.**, Akal-Strader, A., Becker, J.M., Naider, F., and Dumont, M.E. (2000) A limited spectrum of mutations causes constitutive activation of the yeast α -factor receptor. *Biochemistry*, 39: 6898-6909
30. Leavitt, L.M., Macaluso, C.R., Kim, K.S., **Martin, N.P.**, and Dumont M.E. (1999) Dominant negative mutations in the α -factor receptor, a G protein-coupled receptor encoded by the *STE2* gene of the yeast *Saccharomyces cerevisiae*. *Mol. Gen. Genet.*, 261: 917-932
31. **Martin, N.P.**, Leavitt, L.M., Sommers, C.M., and Dumont, M.E. (1999) Assembly of G protein coupled receptors from fragments: identification of functional receptors with discontinuities in each of the loops connecting transmembrane segments. *Biochemistry*, 38: 682-695