

Curriculum Vitae

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

10/1998 - 03/2001 Ph.D. in Biochemistry, University of Rochester, School of Medicine and Dentistry, Rochester, NY
09/1995 - 10/1998 M.S. in Biochemistry, University of Rochester, School of Medicine and Dentistry, Rochester, NY
09/1992 - 05/1995 B.S. in Biochemistry, SUNY College at Geneseo, Geneseo, NY

Professional Positions

10/2018 – Present Director, Viral Vector Core
Staff Scientist, NIEHS-National Institute of Health, RTP, NC

- Manage day-to-day activities of the core
- Supervise staff (3 biologist, IRTA fellows and summer interns)
- Provide consultation and technical expertise in the design, implementation, analysis, and troubleshooting of viral applications in research
- Develop collaborative projects and support research at the NIEHS
- Import, optimize, and validate viral technology
- Implement guidelines and policies for viral production and safe use of viruses *in vitro* and *in vivo*
- Train NIEHS staff in viral applications and biochemical techniques

06/2016 – 10/2018 Acting Director, Viral Vector Core
NIEHS-National Institute of Health, RTP, NC

05/2009 – 06/2016 Biologist, Viral Vector Core, NIEHS-National Institute of Health, RTP, NC

07/2008 – 05/2009 Research Fellow, NIEHS-National Institute of Health, RTP, NC
Mentor: Dr. David L. Armstrong

07/2005 – 07/2008 IRTA Fellow, NIEHS-National Institute of Health, RTP, NC
Mentor: Dr. David L. Armstrong

09/2003 – 07/2005 IRTA Fellow, NIEHS-National Institute of Health, RTP, NC
Mentor: Dr. John O'Bryan

05/2001 – 09/2003 Postdoctoral Fellow, Duke University Medical Center, Durham, NC
Mentor: Dr. Robert J. Lefkowitz

- 09/1995 – 3/2001 Teaching Assistant (1 year), School of Medicine and Dentistry, University of Rochester, Rochester, NY
Mentor: Dr. Mark E. Dumont
- 01/1994 – 08/1995 Research Assistant, Fison/Astra Pharmaceuticals, Rochester, NY

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 ASGCT Nonviral Therapeutic delivery Committee
- Member of the American Association for the Advancement of Science (AAAS)
- Member of the *PLOS ONE* and *Frontiers in Cellular and Infection Microbiology* editorial board and member of the Heliyon editorial advisory board
- Ad hoc Reviewer for *Environmental Health Perspective*, *PLOS ONE*, *Communications Biology*, *Microorganisms*, *Frontiers in Bioengineering and Biotechnology*, *Heliyon*, *Viruses*, *Vaccines*, *Molecules*, *Cell Signaling*, *Pathogens*, *Current Pharmaceutical Biotechnology*, *Virology*, *Cytotechnology*, *Biochemistry*, *Computational and Structural Biotechnology Journal*, *Environmental Toxicology and Pharmacology*, *Molecular Diagnosis & Therapy*, and more
- 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 Environmental Awareness and Advisory Committee, 2021-present
- 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 Scientists Council from 2024-present as the secretary
- 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 50 NIEHS trainees and staff
- 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

Publications

1. Stober VP, Trempus CS, Galdi F, **Martin N**, Gladwell W, Cronce M, Chen SH, Sakamachi Y, Li JL, Zaccaro DJ, Tucker CJ, Scappini E, Campos Gomez J, Tapper J, Harrod KS, Rowe SM, Cowman M,

Barkauskas CM, Lee PJ, Pedone C, Matalon S, Antonelli R, Savani R, Garantziotis S (2024) Hyaluronan Ameliorates Viral Pneumonia via Steric Inhibition of Virion Attachment to Cells and Inhibition of E2F1-mediated Lung Inflammation. *Nature Communications*. submitted.

2. B. Alex Merrick, Ashley M. Brooks, Julie F. Foley, **Negin P. Martin**, Rick D. Fannin, Wesley Gladwell, and Kevin E. Gerrish (2024) Transcriptomes and Genomic Karyotyping of Immortalized Mouse Proximal Tubule Cells. *Gene*. submitted.
3. Bo He, Belinda Wilson, Shih-Heng Chen, Kedar Sharma, Erica Scappini, Molly Cook, Robert Petrovich, and **Negin P. Martin**. Molecular Engineering of Virus Tropism. *Int. J. Mol. Sci.*, 2024;25 (20), 11094; doi: 10.3390/ijms252011094 <https://doi.org/10.3390/ijms252011094>
4. **Chen SH**, Damborsky JC, **Wilson BC**, Fannin RD, Ward JM, Gerrish KE, He B, **Martin NP**, Yakel JL. $\alpha 7$ nicotinic receptor activation mitigates herpes simplex virus type 1 infection in microglia cells. *Antiviral Res.* 2024;228:105934. Epub 20240615. doi: <https://doi.org/10.1016/j.antiviral.2024.105934>. PubMed PMID: 38880195; PMCID: PMC11250235.
5. Fessler MB, Madenspacher JH, Baker PJ, Hilligan KL, Bohrer AC, Castro E, Meacham J, **Chen SH**, Johnson RF, McDonald JG, **Martin NP**, Tucker CJ, Mahapatra D, Cesta M, Mayer-Barber KD. Endogenous and Therapeutic 25-Hydroxycholesterols May Worsen Early SARS-CoV-2 Pathogenesis in Mice. *Am J Respir Cell Mol Biol.* 2023;69(6):638-48. doi: <https://doi.org/10.1165/rcmb.2023-0007OC>. PubMed PMID: 37578898; PMCID: PMC10704115.
6. Gupta A, Li Y, **Chen SH**, Papas BN, **Martin NP**, Morgan M. TUT4/7-mediated uridylation of a coronavirus subgenomic RNAs delays viral replication. *Commun Biol.* 2023;6(1):438. Epub 20230421. doi: <https://doi.org/10.1038/s42003-023-04814-1>. PubMed PMID: 37085578; PMCID: PMC10119532.
7. Inoue K, Bostan H, Browne MR, Bevis OF, Bortner CD, Moore SA, Stence AA, **Martin NP**, **Chen SH**, Burkholder AB, Li JL, Shaw ND. DUX4 double whammy: The transcription factor that causes a rare muscular dystrophy also kills the precursors of the human nose. *Sci Adv.* 2023;9(7):eabq7744. Epub 20230217. doi: <https://doi.org/10.1126/sciadv.abq7744>. PubMed PMID: 36800423; PMCID: PMC9937577.
8. Chen, SH., He, B., Singh, S., **Martin, N.P.** (2023). Vector Tropism. In: Eldridge, M.A., Galvan, A. (eds) *Vectorology for Optogenetics and Chemogenetics*. *Neuromethods*, vol 195. Humana, New York, NY. <https://link.springer.com/book/10.1007/978-1-0716-2918-5>
9. Merrick BA, **Martin NP**, Brooks AM, Foley JF, Dunlap PE, Ramaiahgari S, Fannin RD, Gerrish KE. Insights into Repeated Renal Injury Using RNA-Seq with Two New RPTEC Cell Lines. *Int J Mol Sci.* 2023;24(18). Epub 20230918. doi: <https://doi.org/10.3390/ijms241814228>. PubMed PMID: 37762531; PMCID: PMC10531624.
10. Esparza TJ, Chen Y, **Martin NP**, Bielefeldt-Ohmann H, Bowen RA, Tolbert WD, Pazgier M, Brody DL. Nebulized delivery of a broadly neutralizing SARS-CoV-2 RBD-specific nanobody prevents clinical, virological, and pathological disease in a Syrian hamster model of COVID-19. *MAbs.* 2022;14(1):2047144. doi: <https://doi.org/10.1080/19420862.2022.2047144>. PubMed PMID: 35289719; PMCID: PMC8928829.

11. Hong J, Kwon HJ, Cachau R, Chen CZ, Butay KJ, Duan Z, Li D, Ren H, Liang T, Zhu J, Dandey VP, **Martin NP**, Esposito D, Ortega-Rodriguez U, Xu M, Borgnia MJ, Xie H, Ho M. Dromedary camel nanobodies broadly neutralize SARS-CoV-2 variants. *Proc Natl Acad Sci U S A*. 2022;119(18):e2201433119. Epub 20220427. doi: <https://doi.org/10.1073/pnas.2201433119>. PubMed PMID: 35476528; PMCID: PMC9170159.
12. **Martin NP**, Harry GJ. Imaging Inflammasome Activation in Microglia. *Curr Protoc*. 2022;2(10):e578. doi: <https://doi.org/10.1002/cpz1.578>. PubMed PMID: 36286528; PMCID: PMC9614552.
13. McGee C, Shi M, House J, Drude A, Gonzalez G, **Martin N**, **Chen SH**, Rogers H, Njunge A, Hodge X, Mosley B, George M, Agrawal R, Wild C, Smith C, Brown A, Barber L, Garantziotis S. Longitudinal Serological Surveillance for COVID-19 Antibodies after Infection and Vaccination. *Microbiol Spectr*. 2022;10(5):e0202622. Epub 20220919. doi: <https://doi.org/10.1128/spectrum.02026-22>. PubMed PMID: 36121258; PMCID: PMC9603261.
14. Childers GM, Perry CA, Blachut B, **Martin N**, Bortner CD, Sieber S, Li JL, Fessler MB, Harry GJ. Assessing the Association of Mitochondrial Function and Inflammasome Activation in Murine Macrophages Exposed to Select Mitotoxic Tri-Organotin Compounds. *Environ Health Perspect*. 2021;129(4):47015. Epub 20210430. doi: <https://doi.org/10.1289/ehp8314>. PubMed PMID: 33929904; PMCID: PMC8086801.
15. Foo ACY, Thompson PM, **Chen SH**, Jadi R, Lupo B, DeRose EF, Arora S, Placentra VC, Premkumar L, Perera L, Pedersen LC, **Martin N**, Mueller GA. The mosquito protein AEG12 displays both cytolytic and antiviral properties via a common lipid transfer mechanism. *Proc Natl Acad Sci U S A*. 2021;118(11). doi: <https://doi.org/10.1073/pnas.2019251118>. PubMed PMID: 33688047; PMCID: PMC7980415.
16. Esparza TJ, **Martin NP**, Anderson GP, Goldman ER, Brody DL. High affinity nanobodies block SARS-CoV-2 spike receptor binding domain interaction with human angiotensin converting enzyme. *Sci Rep*. 2020;10(1):22370. Epub 20201222. doi: <https://doi.org/10.1038/s41598-020-79036-0>. PubMed PMID: 33353972; PMCID: PMC7755911.
17. Li Y, Hamilton KJ, Perera L, Wang T, Gruzdev A, Jefferson TB, Zhang AX, Mathura E, Gerrish KE, Wharey L, **Martin NP**, Li JL, Korach KS. ESR1 Mutations Associated With Estrogen Insensitivity Syndrome Change Conformation of Ligand-Receptor Complex and Altered Transcriptome Profile. *Endocrinology*. 2020;161(6). doi: <https://doi.org/10.1210/endo/bqaa050>. PubMed PMID: 32242619; PMCID: PMC7947601.
18. Christine Bowen, Gabrielle Childers, Caroline Perry, **Negin Martin**, Christopher A. McPherson, Tatlock Lauten, Janine Santos, G. Jean Harry (2020) Mitochondrial-related effects of pentabromophenol, tetrabromobisphenol A, and triphenyl phosphate on murine BV-2 microglia cells. *Chemosphere* volume 255, Sept 2020, 126919. doi: [10.1016/j.chemosphere.2020.126919](https://doi.org/10.1016/j.chemosphere.2020.126919). PubMed PMID: 32402876 PMCID: PMC8439439
19. Shih-Heng Chen, Amy Papaneri, Mitzie Walker, Erica Scappini, Robert Keys, and **Negin Martin** (2020) A Simple, Two-Step, Small-Scale Purification of Recombinant Adeno-Associated Viruses. *Journal of Virological Methods*. vol 281, July 2020, 113863. doi: [10.1016/j.jviromet.2020.113863](https://doi.org/10.1016/j.jviromet.2020.113863). PubMed PMID: 32371233 PMCID: PMC7293145

20. C. Romeo, SH. Chen, E. Goulding, L. Van Gorder, M. Schwartz, M. Walker, G. Scott, E. Scappini, M. 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](https://doi.org/10.1016/j.bbrc.2020.03.026). PubMed PMID: 32197836 PMCID: PMC7188573
21. Chen, S.-H., Haam, J., Walker, M., Scappini, E., Naughton, J., & **Martin, N. P.** (2019) Overview: Recombinant viral vectors as neuroscience tools. *Current Protocols in Neuroscience*, e67. [doi: 10.1002/cpns.67](https://doi.org/10.1002/cpns.67)
22. 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](https://doi.org/10.1002/cpns.66)
23. **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. *J Vis Exp* v. (141). [doi: 10.3791/58327](https://doi.org/10.3791/58327). PubMed PMID: 30451224 PMCID: PMC6910824
24. **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](https://doi.org/10.1007/s11248-017-0056-8). PubMed PMID: 29442214 PMCID: PMC5990369
25. 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](https://doi.org/10.1177/2472555216689772). PubMed PMID: 28346099 PMCID: PMC5486949
26. **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](https://doi.org/10.1210/en.2013-2058). PubMed PMID: 24932806 PMCID: PMC4138568
27. 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, vol 478. Springer, Cham. https://link.springer.com/chapter/10.1007/978-3-319-13674-5_1
28. 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](https://doi.org/10.1016/j.bbrc.2014.01.033). PubMed PMID: 24457025 PMCID: PMC3967403
29. 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. PubMed PMID: 22558309 PMCID: PMC3338775

30. 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](https://doi.org/10.1073/pnas.0802250105)
31. Both authors contributed equally. PubMed PMID: 18791070 PMCID: PMC2567201
32. 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. [doi: 10.1128/MCB.01369-07](https://doi.org/10.1128/MCB.01369-07).
33. 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. PubMed PMID: 17550941 [doi: 10.1093/hmg/ddm134](https://doi.org/10.1093/hmg/ddm134)
34. **Martin, N.P.**, Mohney, 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. [doi: 10.1124/mol.106.028274](https://doi.org/10.1124/mol.106.028274).
35. 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. [doi: 10.1016/j.npep.2005.09.005](https://doi.org/10.1016/j.npep.2005.09.005).
36. 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. [doi: 10.1073/pnas.0600080103](https://doi.org/10.1073/pnas.0600080103).
37. **Martin, N.P.**, Whalen E.J., Zamah, M.A., Pierce K.L, and Lefkowitz, R.J. (2004) PKA-mediated phosphorylation of the b1-adrenergic receptor promotes Gs/Gi switching. *Cell Signal.* 16 (12): 1397-403. [doi: 10.3724/abbs.2022096](https://doi.org/10.3724/abbs.2022096).
38. 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. [doi: 10.1093/femsyr/foz087](https://doi.org/10.1093/femsyr/foz087).
39. **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. [doi: 10.1074/jbc.M308285200](https://doi.org/10.1074/jbc.M308285200).
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43. 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 -factor receptor](#). *Biochemistry*, 39: 6898-6909. DOI: 10.1021/bi992616a.
44. Leavitt, L.M., Macaluso, C.R., Kim, K.S., **Martin, N.P.**, and Dumont M.E. (1999) Dominant negative mutations in the a-factor receptor, a G protein-coupled receptor encoded by the *STE2* gene of the yeast *Saccharomyces cerevisiae*. *Mol. Gen. Genet.*, 261: 917-932. [doi: 10.1007/s004380051039](https://doi.org/10.1007/s004380051039).
45. **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. [doi: 10.1021/bi982062w](https://doi.org/10.1021/bi982062w).