

CURRICULUM VITAE

Akiko Nishiyama

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EDUCATION: 1984 M.D. Nippon Medical School, Tokyo, Japan; Medicine
1988 Ph.D. Niigata University, Brain Research Institute, Niigata, Japan
Neuropathology / Molecular Neurobiology

APPOINTMENTS:

1988 Research Associate, Brain Research Institute, Niigata University, Japan
1988-91 Postdoctoral Fellow, La Jolla Cancer Research Foundation (currently Sanford
Burnham Institute, La Jolla, CA
1992 Research Fellow, La Jolla Cancer Research Foundation, La Jolla, CA
1993-94 Research Associate, La Jolla Cancer Research Foundation, La Jolla, CA
1995-98 Project Scientist, Department of Neurosciences, Research Institute, The Cleveland
Clinic Foundation, Cleveland, OH
1998-2004 Assistant Professor, Department of Physiology and Neurobiology
University of Connecticut, Storrs, Connecticut
2004-2009 Associate Professor, Department of Physiology and Neurobiology
University of Connecticut, Storrs, Connecticut
2009-present Professor, Department of Physiology and Neurobiology, University of Conn, Storrs
2007-present Member, University of Connecticut Stem Cell Institute
2014-present Member, University of Connecticut Institute for Systems Genomics
2016-present Member, Connecticut Institute of Brain and Cognitive Sciences
2021-present Professor and Head, Department of Physiology and Neurobiology, University of
Connecticut, Storrs

Society Membership:

The Society for Neuroscience (since 1993)
Connecticut Academy of Arts and Sciences (since 2010)
(2015~ 2016 Vice President representing University of Connecticut)
Connecticut Academy of Science and Engineering (since 2018)

Honors and Awards:

1984 Nippon Medical School Alumni Award
2015 CLAS Excellence in Research Award, University of Connecticut
2023 UConn AAUP (American Association of University Professors) Excellence in
Research and Creativity Career Award

SERVICES:

Grant reviews:

2001 Adhoc reviewer, Veterans Affairs Merit Review
2001 - 2002 Adhoc reviewer, NIH BDCN-2
2002 Adhoc reviewer, MS Society for Australia
2002 - 2003 Reviewer of NIH ZRG1 BDCN-2 Study Section

2005 Panel reviewer for NSF Biology
 2005 - 2009 Member NIH ZRG1 CNNT study section
 2007, 8 Adhoc reviewer, NIH ZRG1 BDCN-2 Study Section
 2008 Adhoc reviewer, NIH NSD-C Study Section
 2009 Adhoc reviewer, ZRG1 CB-Q 30P Shared Instrumentation
 Adhoc reviewer, ZRG1 BDCN-T (58) R Challenge grants
 2010, 2012 Adhoc reviewer for the Royal Society University Fellowship (UK) and Agent
 Nationale de la Recherche (France)
 2011 Adhoc reviewer, ZRG1 MDCN-N (02) M
 2012 Adhoc reviewer, ZMH1 ERB-M (06)
 2012 Adhoc reviewer, International Spinal Research Trust
 2013 Adhoc reviewer, International Spinal Research Trust
 2013 Adhoc reviewer, ARSEP grant, Foundation ARSEP, France
 2013 Adhoc reviewer, DARPA grant (US Army)
 2014 Adhoc reviewer, ZRG1 GGG-R (81), ZRG1 GGG-R (80)
 2015, 2016 Adhoc reviewer, NIH MDCN N92
 2017 Adhoc reviewer, National Multiple Sclerosis Society
 2018 Adhoc reviewer, ARSEP grant, France, MRC, UK
 2019 Adhoc reviewer, ARSEP grant, France
 2020 June Adhoc reviewer, NIH CMBG (Cell and Molecular Biology of Glia) study section
 2021 Adhoc reviewer, Recherche FRC, Wellcome Trust grant
 2021 Nov Adhoc reviewer, NIH ZRG1 MDCN-J (02) study section
 2023 April Adhoc reviewer, Deutsche Forschungsgemeinschaft (German Research
 Foundation) grant
 2023 May Adhoc reviewer, NIH Special Emphasis panel, Clinical Neuroscience;

Editorial board membership and manuscript reviews:

Associate editor, *Neuroscience Letters* (2016~2022)

Member, Editorial Board, *GLIA* (2011-2018, 2019~), *Dev Neurosci* (since 2013~), *Neuroglia* (2017~2019)

Guest editor: *Neuroscience Letters* Special Issue on Oligodendrocyte Niches in Development and Repair; 2020

Adhoc reviewer for Nature, Nat Neurosci, Nat Commun, Nat Prot, Commun Biol, Sci Rep, PNAS, Cell Rep, Cell Stem Cells, Development, Neuron, J Cell Biol, Oncogene, Physiol Rev, Glia, Neuroglia, J Neurosci, Mol Cell Neurosci, J Neurosci Res, Exp Neurol, Neuroscience, Nature Protocols, Cerebral Cortex, Stem Cells, Frontiers in Neurosci, PLoS ONE, Hippocampus, Brain Research, etc.

EXTERNAL FUNDING:

1989-1991 NIH Training Grant (T32 CA09579-03)

1995-1996 Pilot Grant (PP0453; PI: AN) National MS Society

1997-2001 NIH RO1 (NS35136; PI: AN); \$318,429

1998-2002 Research Grant (A2826, PI: AN) National MS Society

2001 NIH Shared Instrumentation Grant (1S10RR015684-01) \$196,006 (confocal microscope) (PI: AN)

2001-2002 Pilot Grant, National MS Society (PP0810; PI: AN); A genetic approach to investigate oligodendrocyte differentiation \$25,000 total direct

2002-2005 Wadsworth Foundation (PI: AN); The role of BDNF in oligodendrocyte-neuron signaling (PI: AN), \$300,000 total direct

2003-2006 Research Grant, National Multiple Sclerosis Society (A2826-B4; PI: AN); The role of NG2 glial cells in remyelination; \$413,475 total direct

2003-2006 NSF Research Grant (0316893, PI: AN); Molecular mechanism of glial progenitor cell differentiation; \$278,450 total direct

2005-2010 NIH (R01 NS049267, PI: AN); Mechanisms of axon-NG2 cell interaction; \$925,000 total direct

2007-2011 Connecticut Stem Cell Program (06SCB03, PI: AN); Optimizing axonal regeneration using a polymer scaffold containing human embryonic stem cells; \$423,897 total direct

2010-2012 NIH (R21 NS 069960, PI: AN); Regulation of glial lineage plasticity by Olig2, \$275,000 total direct

2011-2016 NIH (R01 NS073425, PI: AN); Inflammation and NG2 cell differentiation; \$1,093,750 total direct

2011-2014 Research Grant, National Multiple Sclerosis Society (RG4579A5/1, PI: AN); Promoting remyelination from endogenous NG2 cells; \$93,750 total direct

2012-2017 NIH (R01 NS074870, PI: AN); Heterogeneity of NG2 glial cells; \$1,093,750 direct

2014-2015 NIH (S10OD016435, PI: AN) Leica TCS SP8 FSU AOBIS 405 UV Spectral Confocal Microscope; \$456,323

2016-2017 CURE (Citizens United for Research in Epilepsy) Innovator Award (PI: AN); Reprogramming NG2 glial cells into interneurons in an epilepsy model; \$50,000.

2017-2022 NIH (2R01NS073425, PI: AN); Homeostatic regulation of NG2 cell dynamics; \$1,093,750 total direct

2017-2020 NMSS (RG-1612-26501, PI: AN); Neuronal activity-dependent regulation of remyelination and chromatin remodeling. \$555,343 total direct (\$211,000 subcontract to Dr. Maria Cecilia Angulo, CNRS, Paris).

2019-2020 NMSS Pilot Award (PP-1809-32554, PI: AN); VAMP2-mediated exocytosis in NG2 cells is needed for myelination. \$50,000 direct.

2019-2022 Marie Sklodowska-Curie Global Individual Fellowship (845336, PI: Friederike Pfeiffer); The role of NG2 cells in the neural network in health and disease. Subcontract to UConn from Eberhard Karls Universität Tübingen. €19,200.

2020-2025 NIH (R01NS116182, PI: AN), SNARE complex-mediated exocytosis in oligodendrocyte differentiation and survival. \$216,735 annual direct.

BIBLIOGRAPHY:

Peer-reviewed journal articles.

1. Nishiyama, A., Fujii, S., and Sugimoto, K. Observations on the so-called chromaffin cells. *Nippon Medical School Journal* 48:152-159, 1981.
2. Kumanishi, T., Washiyama, K., Saito, T., Nishiyama, A., Abe, S., and Tanaka, R. Primary malignant lymphoma of the brain: an immunohistochemical study of eight cases using a panel of monoclonal and heterologous antibodies. *Acta Neuropathol.* 71:109-116, 1986.
3. Abe, S., Shimbo, Y., Saito, T., Kohno, M., Nishiyama, A., and T. Kumanishi. An immunohistochemical study on "neoplastic angioendotheliosis": demonstration of B lymphocyte markers in the neoplastic cells. *Acta Neuropathol.* 5:313-316, 1988.
4. Kurihara, T., Takahashi, Y., Nishiyama, A., and Kumanishi, T. cDNA cloning and amino acid sequence of human brain 2',3'-cyclic nucleotide 3'-phosphodiesterase. *Biochem. Biophys. Res. Comm.* 152:837-842, 1988.
5. Nishiyama, A., Saito, T., Abe, S., and Kumanishi, T. An immunohistochemical analysis of T cells in primary B cell malignant lymphoma of the brain. *Acta Neuropathol.* 79:27-29, 1989.
6. Nishiyama, A., Onda, K., Washiyama, K., Kumanishi, T., Kuwano, R., Sakimura, K., and Takahashi, Y. Differential expression of glial fibrillary acidic protein in human glioma cell lines. *Acta Neuropathol.* 78:9-15, 1989.

7. Kumanishi, T., Washiyama, K., Nishiyama, A., Abe, S., Saito, T., and Ichikawa, T. Primary malignant lymphoma of the brain: demonstration of immunoglobulin gene rearrangements in four cases by the Southern blot hybridization technique. *Acta Neuropathol.* 79:23-26, 1989.
8. Yoshida, Y., Kumanishi, T., Abe, S., Nishiyama, A., Yamada, M., and Hinokuma, K. Glomeruloid blood vessels in ethylnitrosourea-induced rat gliomas: histological and immunohistochemical studies. *Acta Neuropathol.* 79:240-247, 1989.
9. Usui, H., Katagiri, T., Yoshida, Y., Nishiyama, A., Ichikawa, T., Kuwano, R., Takahashi, Y., and Kumanishi, T. In situ hybridization histochemistry of spot 35 protein, a calcium-binding protein, in the rat brain. *Mol. Chem. Neuropathol.* 14:207-216.3:569-578, 1991
10. Nishiyama, A., Dahlin, K., and Stallcup, W. B. The expression of NG2 proteoglycan in the developing rat limb. *Development* 111:933-944, 1991.
11. Nishiyama, A., Dahlin, K., Prince, J., Johnstone, S., and Stallcup, W.B. The primary structure of NG2, a novel membrane-spanning proteoglycan. *J. Cell Biol.* 114:359-371, 1991.
12. Stallcup, W. and Nishiyama, A. NG2, a large membrane-spanning proteoglycan. *Trends in Glycoscience and Glycotechnology* 4:61-70, 1992.
13. Prince, J., Nishiyama, A., Healy, P., Beasley, L., and Stallcup, W.B. Expression of the F84.1 glycoprotein in the spinal cord and cranial nerves of the developing rat. *Dev. Brain Res.* 68:193-201, 1992.
14. Kumanishi, T., Usui, H., Ichikawa, T., Nishiyama, A., Katagiri, T., Abe, S., Yoshida, Y., Washiyama, K., Kuwano R., Sakimura, K., Takahashi, Y., Monoshima, S., Fukuyama, R., and Shimizu, N. Human GFAP: Molecular cloning of the complete cDNA sequence and chromosomal localization (chromosome 17) of the GFAP gene. *Acta Neuropathol.* 83:569-578, 1992.
15. Nishiyama, A. and Stallcup, W.B. Expression of NG2 proteoglycan causes retention of type VI collagen on the cell surface. *Mol. Biol. Cell* 4:1097-1108, 1993.
16. Nishiyama, A., Lin, X.-H., and Stallcup, W.B. Generation of truncated forms of the NG2 proteoglycan by cell surface proteolysis. *Mol. Biol. Cell* 6:1819-1832, 1995.
17. Nishiyama, A., Lin, X.-H., Giese, N., Heldin, C.-H., and Stallcup, W.B. Co-localized expression of NG2 proteoglycan and PDGF α receptor on O2A progenitor cells in the developing rat brain. *J. Neurosci. Res.* 43:299-314, 1996.
18. Nishiyama, A., Lin, X-H., Giese, N., Heldin, C-H., and W. B. Stallcup. Interaction between NG2 proteoglycan and PDGF α receptor on O2A progenitor cells is required for optimal response to PDGF. *J. Neurosci. Res.* 43:315-330, 1996.
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20. Levine, J.M. and Nishiyama, A. The NG2 chondroitin sulfate proteoglycan: a multifunctional proteoglycan associated with immature cells. *Persp. Dev. Neurobiol.* 3:245-259, 1996.
21. Trapp, B.D. Nishiyama, A., Cheng, D. and Macklin, W. Differentiation and death of premyelinating oligodendrocytes in developing rodent brain. *J. Cell Biol.* 137:459-468, 1997.

22. Nishiyama A, Yu, M., Drazba, J.A. and Tuohy, V.K. Normal and reactive NG2+ glial cells are distinct from resting and activated microglia. *J. Neurosci. Res.* 48:299-312, 1997.
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29. Nishiyama A, Chang A, and Trapp BD. NG2+ glial cells: a novel glial cell population in the adult brain. *J Neuropathol Exp Neurol.* 58:1113-24, 1999.
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34. Bu J, Akhtar N, and Nishiyama A. Transient expression of the NG2 proteoglycan by a subpopulation of activated macrophages in an excitotoxic hippocampal lesion. *Glia* 34:296-310, 2001.
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38. Bu J, Banki A, Wu Q, and Nishiyama A. Increased NG2+ glial cell proliferation and oligodendrocyte generation in the hypomyelinating mutant shiverer. *Glia* 48:51-63, 2004.
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45. Zhu X, Bergles DE, Nishiyama A. NG2 glial cells generate both oligodendrocytes and astrocytes. *Development* 135(1):145-57, 2008.
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48. Nishiyama A, Komitova, M, Suzuki R, Zhu X. NG2 cells (polydendrocytes): multifunctional cells with lineage plasticity. *Nature Rev Neurosci* 10:9-22, 2009.
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56. Zhu X, Hill RA, Dietrich D, Komitova M, Suzuki R, and Nishiyama A. Age-dependent fate and lineage restriction of single NG2 cells. *Development* 138:745-753, 2011.
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60. Moore CS, Milner R, Nishiyama A, Frausto RF, Serwanski DR, Pagarigan RR, Whitton JL, Miller RH, Crocker SJ. Astrocytic tissue inhibitor of metalloproteinase-1 (TIMP-1) promotes oligodendrocyte differentiation and enhances CNS myelination. *J Neurosci*. 31(16):6247-54, 2011.
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69. Nishiyama A, Suzuki R, Zhu X. NG2 cells (polydendrocytes) in brain physiology and repair. *Front in Neurosci* 8:133, 2014. (PMID: 25018689)
70. Galvao RP, Kasina A, McNeill RS, Harbin JE, Foreman O, Verhaak RG, Nishiyama A, Miller CR, Zong H. Transformation of quiescent adult oligodendrocyte precursor cells into malignant glioma through a multistep reactivation process. *Proc Natl Acad Sci U S A* 111(40):E4214-23, 2014.
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72. Nishiyama A, Boshans L, Goncalves CM, Wegrzyn J, and Patel K. Lineage, fate, and fate potential of NG2-glia. *Brain Res. Vol 1638, part B* 116-128, May 1, 2016.
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74. Tognatta R, Sun W, Goebbels S, Nave KA, Nishiyama A, Schoch S, Dimou L, Dietrich D. Transient Cnp expression by early progenitors causes Cre-Lox-based reporter lines to map profoundly different fates. *Glia.* 65(2):342-359, 2017 (Feb).
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81. Boshans LL, Factor DF, Vijender S, Liu J, Zhao C, Mandoiu I, Lu QR, Casaccia P, Tesar PJ, and Nishiyama A. 2019. The chromatin environment around interneuron genes in OPCs and their potential for interneuron reprogramming. *Front Neurosci* vol 13 article 829, 2019. (August) 2019

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83. Medved J, Wood WM, Van Heyst MD, Sherafat A, Song J-Y, Sakya S, Wright DL and Nishiyama A. 2021. Novel guanidine compounds inhibit platelet-derived growth factor receptor alpha transcription and oligodendrocyte precursor cell proliferation. *GLIA* 69(3):792-811. (March 2021) doi.org/10.1002/glia.23930
84. Boshans LL, Soh H, Wood WM, Nolan TM, Mandoiu II, Yanagawa Y, Tzingounis AV, Nishiyama A. 2021. Direct reprogramming of oligodendrocyte precursor cells into GABAergic inhibitory neurons by a single homeodomain transcription factor Dlx2. *Sci Rep* 11(1):3552 (pp1-15). Feb 11. doi: [10.1038/s41598-021-82931-9](https://doi.org/10.1038/s41598-021-82931-9).
85. Nishiyama A, Shimizu T, Sherafat A, and Richardson WD. 2021. Life-long oligodendrocyte development and plasticity. *Sem Cell Dev Biol*. 116:25-37. Mar 16. doi: [10.1016/j.semcdb.2021.02.004](https://doi.org/10.1016/j.semcdb.2021.02.004)
86. Sherafat A, Pfeiffer F, Reiss AM, Wood WM, and Nishiyama A. 2021. Microglial Neuropilin-1 trans-regulates oligodendrocyte expansion during development and remyelination. *Nat Commun* 12(1):2265 (pp1-17) April 15. <https://doi.org/10.1038/s41467-021-22532-2>
87. Nishiyama A, Serwanski DR, and Pfeiffer F. 2021. Many roles for oligodendrocyte precursor cells in physiology and pathology. *Neuropathology* 41(3): 161-173. June (epub April 28) <https://doi.org/10.1111/neup.12732>
88. Pfeiffer F and Nishiyama A. 2021. The impact of fixation on the detection of oligodendrocyte precursor cell morphology and vascular associations. *Cells* 10(6):1302 (May 24). <https://doi.org/10.3390/cells10061302>
89. Sherafat A, Pfeiffer F, and Nishiyama A. 2021. Shaping of regional differences in oligodendrocyte dynamics by regional heterogeneity of the pericellular microenvironment. *Front Cell Neurosci*. doi: [10.3389/fncel.2021.721376](https://doi.org/10.3389/fncel.2021.721376)
90. Wang J, Yang L, Jiang M, Zhao C, Liu X, Berry K, Waisman A, Langseth AJ, Novitch BG, Bergles DE, Nishiyama A, Lu QR. *Olig2* ablation in immature oligodendrocytes does not enhance CNS myelination and remyelination. *J Neurosci*. 2022 Nov 9;42(45):8542-8555. DOI: [10.1523/JNEUROSCI.0237-22.2022](https://doi.org/10.1523/JNEUROSCI.0237-22.2022)
91. Fekete CD, Nishiyama A. Presentation and integration of multiple signals that modulate oligodendrocyte lineage progression and myelination. *Front Cell Neurosci*. 2022 Nov 14;16:1041853. DOI: [10.3389/fncel.2022.1041853](https://doi.org/10.3389/fncel.2022.1041853)
92. de Blank P, Nishiyama A, López-Juárez A. A new era for myelin research in Neurofibromatosis type 1. *Glia*. 2023 Jun 29. DOI: [10.1002/glia.24432](https://doi.org/10.1002/glia.24432)
93. Zeynep M. Altunay¹, Joyshree Biswas¹, Robert S. Pijewski^{1,2}, Andrew Tang¹, Lyndsay C. Kresic¹, Alexander D. Schouw¹, Yetunde O. Akinlaja³, Brenna C. McAllister¹, Keaven Caro¹, Perla A. Peña Palomino⁴, Susanne Ressler⁴, Akiko Nishiyama^{3,5}, Stephen J. Crocker^{1,5}, David C.

Martinelli^{1,5}. C1ql1 expression in oligodendrocyte progenitor cells promotes oligodendrocyte differentiation. GLIA submitted (2023-07-23)

94. Fekete CD, Horning RZ, Doron MS, and Nishiyama A. Cleavage of VAMP2/3 affects oligodendrocyte lineage development in the developing mouse spinal cord. J Neurosci submitted.

95. Friederike Pfeiffer^{1,2}, Linda L. Boshans¹, Colin M. Cleary¹, Matan S. Doron¹, Mariapia Grassia², Ulises Arbelo¹, Sarai Leonardo-Marmol¹, Daniel K. Mulkey¹, Akiko Nishiyama^{1*}. Oligodendrocyte precursor cells are an integral part of neural network dynamics associated with collagen VI-rich extracellular matrix remodeling and transforming growth factor beta signaling following neuronal hyperexcitability. Nat Commun submitted.

Non-peer-reviewed journal articles (Invited review articles) and book chapters

1. Nishiyama A. 1998. Glial progenitor cells in normal and pathological states. Keio J. Med. 47:105-208. (Lecture given in the Department of Physiology, Keio University, June, 1998).

2. Nishiyama A and Wu Q. 1999. NG2+ glial progenitor cells in normal adult brain and in the dysmyelinating mutant Jimpy. In Keio University Symposia for Life Science and Medicine, vol 2. pp.339-344. Neural Development. Eds. Uyemura K, Kawamura K, and Yazaki T. Springer-Verlag, Tokyo. Proceedings from the second Keio University International Symposia for Life Sciences and Medicine. "Neuroscience: Frontiers of Neural Development", December, 1997.

3. Nishiyama A. 2000. The NG2 proteoglycan. Connective Tissue. 32:39-43.

4. Nishiyama A. 2001. NG2 Cells in the Brain: A Novel Glial Cell Population. Human Cell. 14:77-82, 2001.

5. Nishiyama A. 2007. Polydendrocytes: NG2 cells with many roles in development and repair of the CNS. Neuroscientist. 13(1):62-76, 2007

6. Nishiyama A. 2007. Chapter 4. NG2 proteoglycan and NG2-expressing cells in the nervous system. Neural Proteoglycans. pp51-65. Ed. N Maeda. Research Sign post.

7. Suzuki R and Nishiyama A. Polydendrocytes: lineage and function. Brain and Nerve. 61(7):733-9, 2009. (Japanese)

8. Zhu X, Suzuki R, Zuo H., and Nishiyama A. Oligodendrocyte Progenitor Cell Culture. Chapter 12. Pp217-230. Protocols for Neural Cell Culture. 4th ed. Ed. During L. Humana Press. 2010.

9. Nishiyama A. Astrocyte differentiation from oligodendrocyte precursors. Chapter 3. Emerging Concepts in Neuro-Oncology. pp. 41-60, Ed. Colin Watts. Springer-Verlag London. 2013. ISBN 0857294571.

10. Nishiyama A. NG2 cells. Chapter 10. Neuroglia 3rd Edition. Ed. Helmut Kettenmann and Bruce Ransom. pp. 109-121. Wiley. 2013. ISBN 0199794596.

11. Nishiyama A, Lee A, and Brunquell CB. Chapter 10. NG2 (Cspg4): Cell surface proteoglycan on oligodendrocyte progenitor cells in the developing and mature nervous system. In Neural Surface Antigens. Chapter 9. Pp103-112. Ed. Jan Pruzsak. Elsevier. 2015.

12. Nishiyama A and Butt AM. Chapter 8. NG2 cells (Polydendrocytes). In "Glial Biology: A Historical Perspective". George DeVries and Anne Boulterne Ed. Wiley-Blackwell. In press.

13. Sherafat MA, Hill RA, and Nishiyama A. Organotypic slice cultures to study oligodendrocyte proliferation, fate, and myelination. *Methods in Molecular Biology*, edition on "Myelin: Methods and Protocols". Ed Ashwin Woodhoo. Springer. 2018.

14. Guest editor, special issue in *Neuroscience Letters* - Oligodendrocyte niches in development and repair. 13 contributors. To be published 2019-2020.

INVITED TALKS

1. Structure, Expression, and Function of a Novel Membrane-Spanning Proteoglycan, NG2. Gordon Research Conference on Proteoglycans. July, 1993. (International meeting)

2. NG2+ Glial Progenitor Cells. Gordon Research Conference on Myelin. May, 1996. (Short Talk; International meeting)

3. Enhanced Proliferation of NG2+ Oligodendrocyte Progenitor Cells in the Dysmyelinating Mutant Jimpy is Correlated with Increased Levels of the Chemokine Gro-alpha. Gordon Research Conference on Myelin. February, 1998. (Short Talk; International meeting)

4. Glial Progenitor Cells in Normal and Pathological States. Department of Physiology, Keio University, June, 1998. (Departmental Seminar)

5. Glial Progenitor Cells in Normal and Pathological States. Tokyo Metropolitan Institute of Neurosciences, June, 1998. (Departmental Seminar)

6. Biology of Glial Progenitor Cells that Express the NG2 Proteoglycan. Symposium on New Frontiers in Matrix Biology: The Nervous System. Nagoya, Japan, June, 1999.

7. Glial Cell Proliferation in the Postnatal CNS: Regulation of Proliferation by Chemokines. Department of Neurobiology and Behavior. State University of New York, Stony Brook. March, 2000. (Departmental Seminar)

(internal) Glial Progenitor Cells in the Brain: a Transgenic Approach to Studying their Lineage and Function. Department of Animal Science, University of Connecticut, March, 2000. (Departmental Seminar)

8. NG2 Cells: A Novel Glial Cell Population in the Brain. Human Cell Society XIIIth Fall International Symposium. Niigata, Japan. 2000.

9. The role of NG2 glial progenitor cells in remyelination and neural circuit. Departmental Seminar (Dept of Anatomy). Virginia Commonwealth University, Richmond, VA June, 2001.

(internal) NG2 glial cells: What are they? What do they do? Department of Pharmacy, University of Connecticut, April, 2003. (Departmental Seminar)

(internal) NG2 glia (polydendrocytes): an active member of the neural community. Keynote presentation; UCHC Neuroscience Program Retreat, October 16, 2003.

10. A positive role for NG2 cells in axonal growth. Winter Conference on Brain Research, January, 2004.

11. Identity, differentiation, and morphology of polydendrocytes (NG2 glia). Symposium on Neural stem and progenitor cells. Summer Meeting for the Anatomical Society of Great Britain and Ireland. University College Cork, Ireland. July 6, 2004.

12. NG2 glial cells: what are they and what do they do? Departmental seminar. Neurobiology. Burnham Institute, La Jolla, CA. October 21, 2004.
13. NG2 glial cells: what are they and what do they do? Departmental seminar. Biomedical Sciences. Iowa State University. February 23, 2005.
14. NG2 glial cells: A fourth glial cell population in the mammalian brain. Keynote presentation: Workshop on neuron-glia network. July 2005. Atami, Japan.
15. NG2 glial cells: a physiological role for the fourth glial cell population in the brain. Seminar. Tokyo Metropolitan Institute of Neuroscience. July 2005.
16. The fate of NG2 glia. Session on "A stem cell is a stem cell is an NG2 cell". 40th Winter Brain Research Conference. Snowmass, CO. January, 2007.
- (internal) The stemness of polydendrocytes / NG2 glial cells and their role in the developing and injured brain. Animal Science 397 Seminar Series, spring 2007. University of Connecticut, Storrs, February 16, 2007
17. NG2 glia: their function and lineage. Tokyo Medical and Dental University. February 28, 2007.
18. NG2 glia (polydendrocytes): their function and lineage. Riken Center for Developmental Biology. Kobe, Japan. March 1, 2007.
19. NG2 cells in the brain: are they multipotential cells or committed glial progenitor cells? Yale School of Medicine (Child Study Center). June 28, 2007.
20. NG2 glia in the brain: their in vivo fate and role in axonal growth. University College London (Department of Physiology), September 3, 2007.
21. Fate of NG2 glia and their role in axonal growth. (organized a Symposium at the Annual Meeting for the Society for Neuroscience, 2007 titled NG2 glia: multifunctional cells exhibiting lineage plasticity.
- (internal) NG2 glia (polydendrocytes) in the brain: their in vivo fate and role in axonal growth. University of Connecticut Health Center (Department of Neuroscience), January 8, 2008.
22. NG2 glia: multifunctional cells with lineage plasticity. University of Bonn, Germany. May 2, 2008.
23. The fate of NG2 cells in vivo. Gordon Research Conference on Myelin. May 6, 2008.
24. NG2 Cells in the Brain: Ubiquitous progenitor cells with multiple functions. University of Rochester Medical Center. January, 2009
25. The fate of NG2 cells in vivo. Colloquium at the Annual Meeting for the American Society for Neurochemistry. Charleston, SC. March, 2009. Also organized the session titled 'Regulation of NG2 cell differentiation in development and disease'.
26. Targeting and fate mapping of NG2 glia by BAC transgenesis. Presentation in a symposium titled 'Conditional mutagenesis in glia: technical advances in the selective modulation of astroglial function'. European Glial Meeting in Paris, September, 2009.

27. Polydendrocytes (NG2 cells): multifunctional cells with lineage plasticity. RIKEN Brain Science Institute. May 2010.
28. Age-dependent changes in the astroglial fate of NG2 cells (polydendrocytes). Glial Biology in Medicine, University of Alabama at Birmingham, December 2010.
29. Age-dependent lineage plasticity of NG2 cells (polydendrocytes). Institute of Molecular Biology. University of Oregon, Eugene. April 2011.
30. Age-dependent changes in the astroglial fate potential of polydendrocytes (NG2 cells). International Society for Neurochemistry. Athens, Greece, August, 2011.
31. Age-dependent lineage plasticity of NG2 cells in the brain. Center for Translational Neuroscience. Case Western Reserve University. Cleveland, OH. March 2012.
32. Genetic fate analysis of NG2 glial progenitor cells (polydendrocytes) in the normal and pathological brain. Department of Stem Cell Research and Regenerative Medicine. Lerner Research Institute. Cleveland Clinic Foundation. Cleveland, OH. March 2012.
33. Age-dependent lineage plasticity of NG2 glial progenitor cells in the brain. Connecticut Stem Cell Retreat. Wesleyan University. April 13, 2012.
34. Lineage plasticity of NG2 cells during development and lesion repair. Gordon Research Conference on Myelin. Il Ciocco, Italy, April 2012.
35. Response of polydendrocytes and neural stem cells to demyelinating injury. Institute of Neuropathology of the University Medical Center, Goettingen, Germany, May 21, 2013.
36. Neurizons 2013: Solving the Brain Puzzle – Building Minds from Molecules. “The puzzle of polydendrocytes: what are they and what do they do?” Max-Planck Institute for Biophysical Chemistry, Goettingen, Germany, May 22-25, 2013.
37. Heterogeneity of polydendrocytes and their differentiation dynamics. Physiological Genomics, Ludwig-Maximilian University, Munich, Germany, May 27, 2013.
38. Regional heterogeneity of NG2 cells (polydendrocytes). Symposium speaker and co-organizer. XIth European Glial Meeting, Berlin, July 2013.
39. NG2 cells: lineage plasticity and dynamics of oligodendrocyte differentiation. Seminar in Molecular Cell Biology, Department of Biology, Johannes Gutenberg University of Mainz, Mainz Germany, July, 2013. Host: Jacky Trotter.
40. NG2 glial cells (polydendrocytes): their fate in development and lesion repair. Department of Neuroscience, University of New Mexico, September 12, 2013.
41. NG2 cell proliferation and dynamics of oligodendrocyte differentiation during development and myelin repair. SUNY Upstate Cell Biology, May 7, 2014.
- (internal) NG2 cells (polydendrocytes): Listeners to the neural network with diverse properties. UCHC Neuroscience, May 12, 2014.
42. Chaired session on “Stem cell potential of glia” at the Gordon Conference on Glial Biology, Ventura, CA, March, 2015.

43. NG2 cells in the neural network: How do they respond to signals from other cells? University of Massachusetts Medical, Worcester, MA, January 2016.
44. NG2 glial cells: their fate and function in the neural network. Tokyo Medical University. Tokyo, Japan, February 2016.
45. Chaired session on “Making myelin and myelinating cells” at the Gordon Conference on Myelin, Italy, May 2016.
- (internal) Exploring the role of NG2 glial cells in the mouse brain network. UConn IBaCS Meet-and-Speak Event, May 8, 2018, Storrs.
46. The role of microglial Neuropilin-1 in oligodendrocyte development and myelin repair. Second Annual Glial Symposium. Advanced Science Research Center. CUNY Neuroscience Initiative. November 13, 2018.
47. Co-chair (with Brahim Nait-Oumesmar): Session title - Oligodendrocyte diversity and dynamics in development and repair. Symposium title – Cell intrinsic and transactivating mechanisms that regulate NG2 cell dynamics during development and remyelination. XIVth European Meeting on Glial Cell Function in Health and Disease. Porto, Portugal, July 2019.
- (Symposium session chair: session title – Oligodendrocyte function in learning and synaptic transmission. 14th Biennial ISN/ASN Satellite Meeting on Myelin Biology, St Paulin, Quebec, August 2019.)
- (internal) Regulation and function of mouse oligodendrocyte precursor cells. Second UConn Brain Research Symposium. September 20, 2019.
- (internal) Critical role of microglial Neuropilin-1 in oligodendrocyte homeostasis. University of Connecticut Health Center Department of Neuroscience. October 3, 2019.
48. The saga of oligodendrocyte precursor cells, whence and whither. Nobel mini-symposium. Nobel Forum, Stockholm. October 9, 2019.
49. Trans-activation of PDGFR on oligodendrocyte precursor cells by microglial Neuropilin-1 – region-specific control of OPC proliferation. University of Wisconsin – Madison, Glia Club seminar. June 24, 2020 (virtual)
50. Region-specific interaction between microglia and oligodendrocyte precursor cells. (keynote address). 42nd Annual Meeting of the Japanese Association of Neural Tissue Culture. Niigata, Japan. November 15, 2020. (virtual)
51. Oligodendrocyte precursor cells (NG2 glia) in the brain - what are they and what do they do in the neural network? Trinity College, Undergraduate neuroscience senior seminar, Feb 23, 2021 (virtual, lecture followed by meeting with students).
52. Co-Chair (with Enrica Boda), Session title: Oligodendrocyte progenitor cell fates and interactions with neurons in the adult and developing brain. Symposium title: Dynamic extension of oligodendrocyte precursor cell processes toward active neurons in the hippocampus, XVIth European Meeting on Glial Cells in Health and Disease, Berlin, July 8-11, 2023.
53. Oligodendrocyte precursor cells in the neural network. Departmental of Neurophysiology, University of Tübingen. July 12, 2023.

54. Cincinnati Children's Medical Center. October 25, 2023.

COURSES TAUGHT

1. Molecular and Cellular Neurobiology (3 credit graduate course) 1999-2011.
2. Fundamentals of Neuroscience (3 credit graduate course; team-taught) 1999-2001
Neuroanatomy section
3. Fundamentals of Neuroscience (3 credit graduate course; team-taught) 2002-2010
Cell biology section
4. Developmental Neurobiology (3 credit graduate course; team-taught) 2011- present
5. Enhanced Human Physiology and Anatomy (5 credit undergraduate course) 1999-2000.
6. Human Physiology and Anatomy (4 credit undergraduate course) 2001 - 2007.
7. Modern Topics in Biology (1 credit, Honors), 2006
8. Biology of Nervous System Diseases (3 credit, upper undergraduate) 2008- present
9. Principles of Physiology and Neurobiology (5 classes, 3 credit, graduate; team-taught) 2020.

ADVISING

Visiting scholars

Hitoshi Gotoh (2012-2014) Assist Prof of Biology, Kyoto Prefectural Med Univ
Enrica Boda (2015) Assistant Professor RTD in Human Anatomy, Torino University
Friederike Pfeiffer (2019-2021) on Marie Sklodowska-Curie Global Individual Fellowship (EU)

Postdoctoral fellows supervised

Qian Wu (1997-1998) Professor of Laboratory Medicine, Univ Connecticut Health Center
Masahiro Watanabe (2000-2002) Professor of Orthopaedic Surg, Tokai University Hospital,
Mila Komitova (2007-2009)
Ryusuke Suzuki (2006-2010) Project Scientist, Cedars Sinai Medical Center, Los Angeles, CA
Christopher Brunquell (2013-2014)
Peter Jukkola (2014-2018) Lab supervisor, Anesthesiology, University of Pittsburgh
William Wood (2015-2020) Consultant at B. Riley Financial

Other mentoring:

Co-sponsored fellowship applications for:
Virginia Hawkins (postdoc, PNB)
Brenda Milla (graduate student, PNB)
Mentor for K01 grant PI Alejandro Lopez-Juarez (University of Texas Rio Grande Valley)

PhD students advised

Major advisor:

| | |
|-----------------------|---|
| Zhongshu Yang | 1999-2005 currently Clinical Assistant Professor in Psychiatry, UC Davis until 2014, currently physician at Kaiser Permanente, Santa Cruz |
| Xiaoqin Zhu | 2004-2010 currently fellow in Pathology (Univ Mass Med Sch) |
| Robert A. Hill | 2007-2012 currently Assist Professor, Dartmouth College, Biology. |
| Hao Zuo | 2006-2012 currently Executive Director, Investment and Development Dept, Chengzhi Shareholding Co., Ltd., Tsinghua Science Park, Beijing |
| Jelena Medved | 2009-2014 currently postdoc (University of Virginia) |
| Kiran Patel | 2010-2016 currently postdoc (Yale University) |
| Alexander Reiss | 2010-2013 (left without a degree, currently res assist at UC San Diego) |
| Linda Boshans | 2013-2020, currently postdoc at MSSM |
| Christopher Goncalves | 2014-2015 – transferred to Dr. Daniel Mulkey' |
| Amin Sherafat | 2014-2021 |
| Christopher Fekete | 2018-2022 |
| Yetunde Akinlaja | 2022-present |

| Associate advisor: | Year completed |
|---|--|
| Weiwei Li (PNB) | 2001 |
| Matthew Sarkisian (PNB) | 2002 |
| Jennifer Bendiske (Pharmacy) | 2001 |
| Linda Chicoine (Pharmacy) | 2002 |
| Byeong-Seon Jeang (Animal Science) | 2003 |
| Eric Charych (PNB) | 2003 |
| Sean Christie (PNB) | 2004 |
| Andrew Doyle (MCB) | 2004 |
| James Ackman (PNB) | 2004 |
| Jilin Bai (PNB) | 2006 |
| Jessica Murphy (PNB) | 2008 |
| Sarah (Yoonjung) Chang (PNB) | 2008 |
| Mary Lou Lombardi (MCB) | 2008 |
| Jie Luo (PNB) | 2010 |
| Kasey Baker (PNB) | 2011 |
| Julio Mendez (MCB) | 2011 |
| Courtney McGinnis (PNB) | 2011 |
| Huyn Ahn Kwang (Pharmacy) | 2011 |
| Renee Gilberti (MCB) | 2011 |
| Brett Shook (PNB) | 2012 |
| Fuyi Chen (PNB) | 2014 |
| Chris Fiondella (PNB) | has not completed program |
| Amalia Force (PNB) | left program |
| Matthew Girgenti (PNB) | left program |
| Quanzhen Hao (PNB) | 2013 |
| Krishna Karunakaran (PNB) | 2015 |
| Ashley Kilcollins (PNB) | 2017 |
| Mariam Mahmoud (Pharmacy) | 2015 |
| Ian Wenker (PNB) | 2013 |
| William Wood (MCB) | 2015 |
| Matthew Eastman (PNB) | 2012- left program |
| Megha Sah (PNB) | 2016 |
| Zacchary Niday (PNB) | 2013-2018 |
| Arpita Biswass (MCB) | 2013-2017 |
| Anthony Patelunas (MCB) | 2014-2016 |
| Wei Shen (PNB) | 2014-2020 |
| Fu-shan Kuo (PNB) | 2014-2019 |
| Christopher Goncalves (PNB) | 2015-2018 |
| Jonathan Choiniere (PNB) | 2016-2019 |
| Behnoush Hajian (Pharmacy) | 2016-2019 |
| Kyle Drake (PNB) | 2018-current |
| Andrew Beard (PNB) | 2018-current |
| Marybeth Baumgartner (PNB) | 2018-2019 (thesis examiner) |
| Oladimeji Aladelokun (PNB and Medicine) | 2018-current |
| Jesse White (PNB) | 2018-2019 |
| Colin Cleary (PNB) | 2018-2021 |
| Amanda Harrop (MCB) | 2019-current |
| Daniel Munteaunu (PNB) | 2019-2020 |
| Rebecca Oramas (PNB) | 2019-current |
| Julianna Hermann (PNB) | 2020-current |
| Anouk Olthof (PNB) | 2018-2020 (proposal and thesis examiner) |
| Brenda Milla (PNB) | 2020-current |
| Janeth Perez Garza (PNB) | 2020-current |
| Jairo Orea (PNB) | 2021-current |

| | |
|------------------------------|--------------|
| Emily Parrish-Mulliken (PNB) | 2021-current |
| Russell Howard (MCB) | 2021-current |

External advisory committee / thesis examiner

| | |
|---|------|
| Alison Jennings (University of Western Australia) | 2006 |
| Juliette Han (Neurobiology; Harvard Medical School) | 2012 |
| Phillip Roth (University of Melbourne, Australia) | 2016 |
| Renee Pepper (University of Tasmania, Australia) | 2020 |
| Mandy Meijer (Karolinska Institute, Sweden) | 2022 |

Masters students advised

Major advisor:

| | |
|-----------------------|---------------------------------|
| Juan Zeng | 2002-2004 |
| Haiyan Wang | 2002-2004 |
| Victoria Bagdasaran | 2004-2006 |
| Ji Shi | 2005-2008 |
| Ryan Wheeler | 2008-2010 |
| Anna Heinrich | 2016-2018 |
| Zach (Robert) Horning | 2016-2020 |
| Elliott Wilion | 2021-2022 (left without degree) |
| Matan Doron | 2022-2023 (left without degree) |

Associate advisor:

| | |
|----------------------------|------|
| Sarah Lozano (PNB) | 1999 |
| Chetan Naik (PNB) | 2006 |
| Richard Lee (PNB) | 2006 |
| Sowmya Sridharan (PNB) | 2006 |
| Greg Bouchard (PNB) | 2006 |
| Sophia Ryzhikov (Pharmacy) | 2007 |
| Keith Dlugolenski (PNB) | 2008 |
| Sara Pope (PNB) | 2010 |
| Zohaib Ikram (PNB) | 2012 |
| Anitha Kumar (PNB) | 2012 |
| David Ingram (PNB) | 2013 |
| Meredith Hailing (PNB) | 2013 |
| Siyang Zhou (PNB) | 2021 |
| Jiayu Hao (PNB) | 2021 |

Undergraduate Students Supervised

University Scholars

| | | |
|-----------------|-----------|---|
| Joshua Sheehan | 1998-2001 | primary care physician at Winchester Hospital, MA Intern, Grad School of Integrated Medicine, Austin, TX MD PhD 2013, Washington University, St Louis 2013- 2017 Resident, Psychiatry, Washington University 2017~ Fellow, Pediatric Psychiatry, UCLA |
| Joshua Shain | 2001-2003 | |
| Tarik Hadzic | 2001-2005 | |
| Christian Colli | 2004-2006 | PhD 2012, UC Santa Barbara, CA; postdoc 2013~ University Scholar award, 2014; PharmD program MS in PNB, UConn |
| Chris Brunquell | 2004-2007 | |
| Sagune Sakya | 2014-2016 | |
| Matan Doron | 2020-2022 | |

Presidential Scholar

| | | |
|-----------|-----------|--|
| Aaron Lee | 2006-2010 | UCHC MD, now cardiology fellow at Temple Univ. |
|-----------|-----------|--|

Nutmeg Scholar

| | | |
|------------------|-----------|-------------------------------------|
| Christopher Sala | 2003-2006 | MD from UCHC 2010, resident at UCHC |
|------------------|-----------|-------------------------------------|

Other honors and non-honors students (2-6 students each year)

REU summer students supervised

| | |
|-----------------------|------|
| Corey Cusack | 2007 |
| Erin Rasco | 2008 |
| Alexandra de la Rocca | 2009 |
| Samuel Asinof | 2011 |

COMMITTEE SERVICE

University committees

1. Radiation Safety Committee (2002 - 2014)
2. Institutional Biological Safety Committee (2010 – 2015, vice chair 2014-5)
3. Research Advisory Council (2011 - 2013)
4. Faculty Review Board (2010 – 2013), Chair 2013
5. Faculty Search Committees (2010, 2011 Pharmacy; 2011 Molecular Cell Biology)
6. Advisory Committee for Animal Care (2014 – present)
7. Facility co-Head, Confocal microscope facility, Biotech Bioservices Center (2014 – 2016)
8. Faculty advisor for Advanced Light Microscopy Facility (COR²E) (2016 – present)
9. Review panel for Faculty Large Grants, UCIG grants, Internal Screening for Major Research Instrumentation Grants, Honors Summer Undergraduate Research Fund, CLAS scholarship committee
10. College of Liberal Arts and Sciences (CLAS) Dean's Advisory Committee on Promotion, Tenure, and Reappointment (2018-2020)

Departmental committees

1. Oversight of PNB confocal facility (2001 - 2015)
Purchased Leica TCS SP2 (2001) and SP8 (2015) Confocal Microscopes for departmental use through NIH Instrumentation Grants.
2. Departmental Faculty Search Committees (2000-2001; 2006-7; 2009-10; 2012-3 (chair for a search for 2 positions); 2016-7(EM facility faculty director search), 2019-20
3. Search Committee for Confocal Facility Scientist (chair) 2014-5.
4. PNB Enhancement Fund Committee (2010~)
5. Promotion, Tenure, and Reappointment committee: 2004, 2006, 2009, 2012, 2014, 2017, 2019
6. Merit committee: 2001, 2006, 2010, 2012, 2014, 2019
7. Graduate Affairs Committee: 2005-2008 (chair 2007-8), 2016-2018
8. Coordinator of departmental seminar series (2006-2008)