

BIOGRAPHICAL SKETCH

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NAME	POSITION TITLE		
Miller, Robert H	Professor		
eRA COMMONS USER NAME	Vice Dean for Research		
MILLE008			
EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)			
INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
University College of London	BSc	1973-1976	Zoology
University College of London	PhD	1977-1980	Zoology

A. Positions and Honors

Positions and Employment

1980-1984 Postdoc Fellow, Neuroimmunology Group, Department of Zoology, University College of London
1984-1986 Senior Research Associate, Department of Developmental Genetics & Anatomy, Case Western Reserve University School of Medicine, Cleveland, OH
1986-1987 Senior Research Fellow, Developmental Neurobiology Group, Department of Zoology, University College of London
1987-1991 Assistant Professor, Department of Neurosciences, Case Western Reserve University School of Medicine, Cleveland, OH
1991-1999 Associate Professor, Department of Neurosciences, Case Western Reserve University School of Medicine, Cleveland, OH
1999- Professor, Department of Neurosciences, Case Western Reserve University School of Medicine, Cleveland, OH
2002- Founding Member, Research Coordinator, Myelin Repair Foundation, Saratoga, CA
2004- Director, Center for Translational Neuroscience, CWRU School of Medicine, Cleveland, OH
2005- Allen C. Holmes Professor of Neurological Diseases, Case Western Reserve University School of Medicine, Cleveland, OH
2007- Vice Dean for Research, Case Western Reserve University School of Medicine, Cleveland, OH

Other Experience and Professional Memberships - Honors

1989 Alfred P. Sloan Fellow
1989 Charles Judson Herrick Award, American Association of Anatomists
1995 John S. Diekhoff Award for Graduate Teaching
1998 Member, MDCN2 NIH Study Section 2000 (**Chair**)
2001 Jacob Javits Investigator NINDS
2003 Outstanding Faculty Award Case Western Reserve University School of Medicine

B. Selected Peer-Reviewed Publications

Segal AW, Geisow M, Garcia R, Harper A, Merzhach D, Miller RH. The respiratory burst of phagocytic cells elevates intravacuolar pH. *Nature* 290:406-409, 1981.
Raff MC, Miller RH, Noble M. A glial progenitor cell that develops *in vitro* into an astrocyte or an oligodendrocyte depending on the culture medium. *Nature* 303:390-396, 1983.
Miller RH, Raff MC. Fibrous and protoplasmic astrocytes are distinct classes of glial cells. *J Neurosci* 2:585-592, 1984.
Miller RH, Lasek RJ. Cross-bridges mediate anterograde and retrograde vesicle transport along microtubules in squid axoplasm. *J Cell Biol* 101:2181-2193, 1985.
Miller RH, Abney ER, David S, French-Constant C, Lindsay R, Patel R, Stone J, Raff MC. Is reactive gliosis a property of a distinct subpopulation of astrocytes? *J Neurosci* 6:22-29, 1986.
Hynes RO, Patel R, Miller RH. Migration of neuroblasts along preexisting axonal bundles during prenatal cerebellar development. *J Neurosci* 6:867-877, 1986.
Miller, RH, Katz, MJ and Lasek, RJ. Preferred microtubules for vesicle transport in lobster axons. *Science*, 235:4785, 1987.

Warf BC, Fok-Seang J, Miller RH. Evidence for the ventral origin of oligodendrocyte precursors in the rat spinal cord. *J Neurosci* 11:2477-2488, 1991.

Miller RH, Szigeti V. Clonal analysis of astrocyte diversity in neonatal rat spinal cord cultures. *Development* 113:353-362, 1991.

Fok-Seang J, Miller RH. Astrocyte precursors in neonatal rat spinal cord cultures. *J Neurosci* 12:2752-2764, 1992.

Gillaspy, G, Miller, RH, Samols, D, Goldthwait, RA. Relationship of human glioblastomas to glial developmental images. *Cancer Ltrs* 68:215-224, 1993.

Noll E, Miller RH. Oligodendrocyte precursors originate at the ventral ventricular zone, dorsal to the ventral midline in the embryonic rat spinal cord. *Development* 118:563-573, 1993.

Ono K, Bansal R, Payne J, Rutishauser U, Miller RH. Early development and dispersal of oligodendrocyte precursors in the embryonic chick spinal cord. *Development* 121:1743-1754, 1995.

Orentas D, Miller RH. The origin of spinal cord oligodendrocytes is dependent on local influences from the notochord. *Dev Biol* 177:43-53, 1996.

Miller RH. Oligodendrocyte Origins. *TINS* 19:92-95, 1996.

Ono, K, Yasui, Y, Rutsihauser, U, Miller, RH (1997) Focal origin and migration of oligodendrocyte precursors into the chick optic nerve. *Neuron* 19, 283-292.

Robinson S, Tani M, Streiter RN, Ransohoff RM, Miller RH. The chemokine growth-regulated oncogene-a promotes spinal cord oligodendrocyte precursor proliferation. *J Neurosci* 18:10457-10463, 1998.

Orentas DM, Miller RH. Regulation of oligodendrocyte development. *Mol Neurosci* 18:247-259, 1998.

Vartanian T, Fischbach G, Miller RH. Failure of spinal cord oligodendrocyte development in mice lacking neuregulin. *Proc Natl Acad Sci USA* 96:731-735, 1999.

Orentas DM, Hayes JE, Dyer KL, Miller RH. Sonic hedgehog signaling is required during the appearance of spinal cord oligodendrocyte precursors. *Development* 126:2431-2439, 1999.

Robinson S, Miller RH. Contact with central nervous system myelin inhibits oligodendrocyte progenitor maturation. *Dev Biol* 216:359-368, 1999.

Nakatsuji Y, Miller RH. Selective cell-cycle arrest and induction of apoptosis in proliferating neural cells by ganglioside GM3. *Exp Neurol* 168:290-299, 2001.

Noll, EN, Lin, J, Nakatsuji, Y, Miller, RH, Black, PMcL. GM3 as a novel growth regulator for human gliomas. *Experimental Neurol* 168:300-309, 2001.

Robinson S, Cohen M, Prayson R, Ransohoff RM, Tabrizi N, Miller RH. Constitutive expression of growth-related oncogene and its receptor in oligodendrogliomas. *Neurosurgery* 48:864-873, 2001.

Davies JE, Miller RH. Local sonic hedgehog signaling regulates oligodendrocyte precursor appearance in multiple ventricular zone domains in the chick metencephalon. *Dev Biol* 233:513-525, 2001.

Nakatsuji Y, Miller RH. Density dependent modulation of cell cycle protein expression in astrocytes. *J Neurosci Res* 66:487-496, 2001.

Nakatsuji Y, Miller RH. Control of oligodendrocyte precursor proliferation mediated by density-dependent cell cycle protein expression. *Dev Neurosci* 23:356-363, 2001.

Viehover, A, Miller, RH, Park, S-K, Fischbach, G, Vartanian, T. Neuregulin: An oligodendrocyte growth factor absent in active Multiple Sclerosis Lesions. *Dev Neurosci* 23, 377-386. 2001.

Park, S-K, Miller, RH, Krane, I, Vartanian, T. The erbB2 gene is required for terminal differentiation and formation of myelin internodes by developing spinal cord oligos. *J Cell Biol* 154, 1245-1258. 2001.

Miller, RH, Robinson S. The role of the Chemokine GRO-1 in the development of cells of the vertebrate CNS. In *Universes in delicate balances*. Elsevier Science Ransohoff, R. et al., Eds.245-254. 2002.

Tsai, H-H, Miller, RH. Glial cell migration directed by axon guidance cues. *TINS* 25, 173-175 2002.

Tsai, H-H, Frost, E, To, V, Robinson, S, French-Constant, C, Geertman, R, Ransohoff, R, Miller, RH. The chemokine receptor CXCR2 controls the positioning of oligodendrocyte precursors in developing spinal cord by arresting their migration. *Cell* 110,373-383. 2002.

Sussman, C, Davies, J, Miller RH. Extracellular and intracellular regulation of oligodendrocyte precursor development: Roles of sonic hedgehog and E proteins. *Glia* 40, 55-64. 2002.

Miller, R.H. Regulation of oligodendrocyte development in the vertebrate CNS. *Progress in Neurobiology* 67, 451-467. 2002.

Baracskey, K, Duchala, C, Miller, RH, Macklin, W, Trapp, BD. Oligodendrogenesis is differentially regulated in gray and white matter. *J Neurosci Res* 70: 645-654. 2002.

Miller, RH. Oligodendrocytes In *Encyclopedia of Neurological Sciences*. Aminoff, MJ, Daroff, RB.

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- Bambakidis, NC, Wang, R-Z, Franic, L, Miller, RH. 2 Sonic hedgehog induces neural precursor proliferation after adult rodent spinal cord injury. *J Neurosurgery* 99:70-75. 2003.
- Bambakidis, NC, Miller RH. Transplantation of oligodendrocyte precursors and sonic hedgehog results in improved function and white matter sparing in the spinal cord of adult rats after contusion. *The Spine Journal* 4: 16-24. 2004.
- Miller, RH, Reynolds, R. Oligodendrocyte Lineage. In *Myelin Biology and Disorders Vol. 1*. 289- 309. Lazarini, R. et al., Eds. Elsevier Academic Press. 2004.
- Miller, RH, Maier, CE, Wang, R, Geertman, R, Dinsio, K, Hall, AK. Patterning of spinal cord oligodendrocyte development by dorsally derived BMP4. *J Neurosci Res* 76:9-19. 2004.
- Hall, AK, Miller, RH. Emerging roles for Bone Morphogenetic Proteins in CNS glial biology. *J Neurosci Res* 76:1-8. 2004.
- Nakatsuji, Y, Miller, RH. Regulation of Cell Cycle Progression in Astrocytes. In *Non-neuronal cells of the nervous system: Function and dysfunction. Advances in Molecular and Cell Biology Vol. 31*. 75-79. L. Hertz Ed. Elsevier Science. 2004.
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Miller, RH, Bai, L. The Expanding Influence of Stem Cells in Neural Repair. Editorial. *Annals of Neurology* 61(3):187-8. 2007.

DeBoy CA, Zhang J, Dike S, Shats I, Jones M, Reich DS, Mori S, Nguyen T, Rothstein B, Miller RH, Griffin JT, Kerr DA, Calabresi PA. High resolution diffusion tensor imaging of axonal damage in focal inflammatory and demyelinating lesions in rat spinal cord. *Brain*. 130(Pt 8):2199-210. 2007

Fuller, ML, DeChant, AK, Rothstein, B, Caprariello, A, Wang, RZ, Hall, AK, Miller, RH. Bone morphogenetic proteins promote gliosis in demyelinating spinal cord lesions. *Annals of Neurology*, 62(3):288-300. 2007

Miller RH, Bai L. Cellular approaches for stimulating CNS remyelination. *Regen Med*, 2(5):817-29. 2007

Mi, S, Miller, RH. Dissecting Demyelination. *Nat Neurosci*, 10(11):1351-1354. 2007

Selkirk, SM, Morrow, J, Barone, T, DeChant, A, Fuller, M, Hoffer, A, Lock, J, Plunkett, R, Miller, RH. Elevation of osteopontin levels in brain tumor cells reduces burden and promotes survival through the inhibition of cell dispersal. *J Neuro-oncology*, 86(3):285-96. 2007