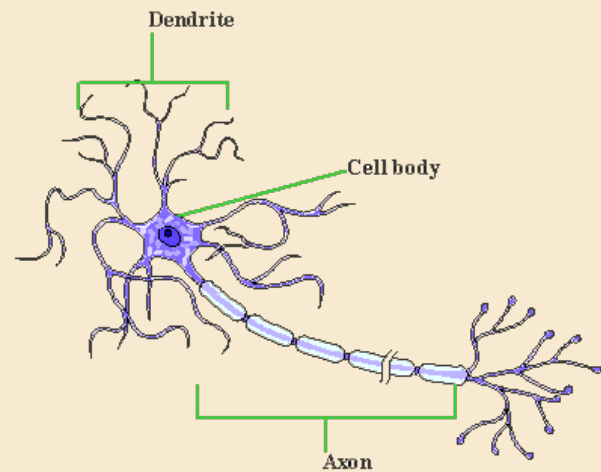




Matthew Qiu

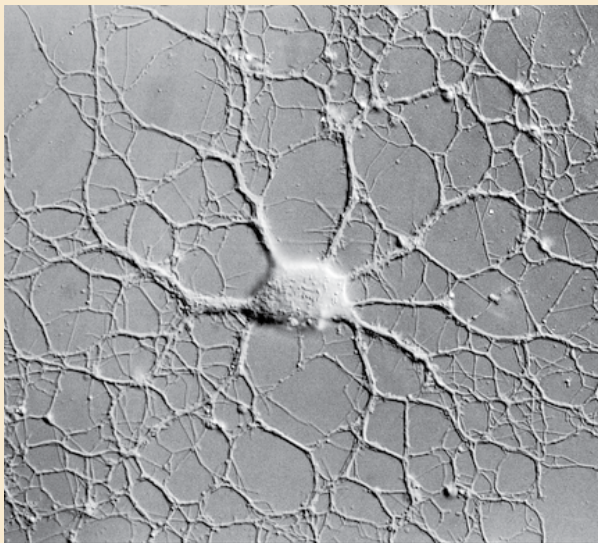
Professor

Department of Anatomical Sciences and
Neurobiology
School of Medicine



Research Activities:

The long-term goal of our research is to understand the molecular and genetic mechanisms that control the differentiation and regeneration of motor neurons and oligodendrocytes, and develop novel molecular strategies for stimulating the de novo regeneration of motor neurons and oligodendrocytes in the injured spinal cord. Research projects include: (1) Identification of the molecular pathways that regulate the early specification and differentiation of motor neurons and oligodendrocytes. (2) Transcriptional and posttranscriptional regulation of homeodomain factors that control the early development of motor neurons and oligodendrocyte cells. (3) Isolation and characterization of the interacting proteins of motor neuron and oligodendrocyte lineage-specific homeodomain transcription factors. (4) Lineage-specific differentiation of embryonic stem cells into motor neurons and oligodendrocytes for spinal cord transplantation.



Grants Funded:

Role: Principal Investigator

Title: Molecular and genetic control of oligodendrocyte development

Funding Agency: NIH

Direct Costs Funded: \$1, 226,157

Role: Principal Investigator

Title: Role of Olig3 bHLH transcription factor in gliogenesis

Funding Agency: NIH

Direct Costs Funded: \$338,336

Role: Principal Investigator

Title: Lineage analysis and signaling mechanism of oligodendrocyte genesis

Funding Agency: National Multiple Sclerosis Society

Direct Costs Funded: \$353, 516

Role: Principal Investigator

Title: Role of Olig3 in cerebellar and precerebellar development

Funding Agency: NIH

Direct Costs Funded: \$354,586

Role: Principal Investigator

Title: Developmental regulation of axonal myelination by Necl molecules

Funding Agency: National Multiple Sclerosis Society

Direct Costs Funded: \$474,019

Role: Co-Investigator

Title: Transcriptional Coactivators and Pregnancy Outcomes

Funding Agency: National Multiple Sclerosis Society

Direct Costs Funded: \$1, 503,187

Peer-reviewed Publications:

Liu Z, Hu X, Cai J, Liu B, Peng X, Wegner M, and **Qiu M.** (2007). Induction of oligodendrocyte differentiation by Olig2 and Sox10: evidence for reciprocal interactions and dosage-dependent mechanisms. *Dev. Biol.* 302, 683-693.

Lee X, Yang Z, Shao Z, Rosenberg SS, Levesque M, Pepinsky RB, **Qiu M**, Miller RH, Chan JR, Mi S (2007). NGF regulates the expression of axonal LINGO-1 to inhibit oligodendrocyte differentiation and myelination. *J. Neurosci.* 27, 220-225.

Liu B, Liu Z, Chen T, Li H, Peng X and **Qiu M** (2007). Selective expression of Bhlhb5 in subsets of early-born interneurons and late-born association neurons in the spinal cord. *Dev. Dyn.* 236, 829-835



Zhang, Y., Shields, L., Pei J., Zhang, Y., Xu, X-M. Hoskins, R., Cai, J., **Qiu, M.**, Magnuson, D., Burke, D., and Shields, C. (2007). The Feasibility of Motor Evoked Potentials, Somatosensory Evoked Potentials, and H-Reflexes Induction in Non-sedated Rodents Using Magnetic Stimulation. *J. of Neurosci. Methods.* 165, 9-17.

Chen X, **Qiu M**, Whittemore S, Cao Q. (2007). BMP signaling and olig1/2 interact to regulate the differentiation and maturation of adult oligodendrocyte precursor cells. *Stem Cell.* 25, 3204-3214

Zhao S, Hu X , Park J, Zhu Y, Zhu Q, Luo C, Han R, Cooper N. and **Qiu M.** (2007). Selective expression of LDLR and VLDLR in myelinating oligodendrocytes. *Dev. Dyn.* 236, 2708-2712.

Li J , Liu Z, Liu Q, Fu X, Cooper N, Pan Y, Li Y , Qiu M*, Shi T*. (2007). Regulatory Network of bHLH Transcription Factors in Mouse Brain. *Genome Biology* (*co-corresponding authors) 8(11):R244.

Hu J., Fu S., Wang Y., Li Y., Jiang X., Wang X, **Qiu M.**, Lu P, Xu X. (2008). PDGF-AA mediates oligodendrocyte lineage differentiation through activation of Erk but not PI3K signaling pathway. *Neuroscience*, 151, 138-147.

Liu Z, Li H, Hu X, Yu L, Liu H, Colella R, Mower G , Chen Y, and **Qiu M.** (2008). Control of precerebellar neuron development by Olig3 bHLH transcription factor. *J. Neurosci.* 28:101 24-33.

Cai J, Zhang Y, Qi Y, Li H, Zhang Y, Han R, Shields CB and **Qiu M.** (2008). Coordinated expression of Nkx2.2 and Nkx6.2 homeodomain transcription factors in myelinating oligodendrocytes. *Glia* In revision.

Park,J, Liu B, Chen T, Li H, Hu, X, Gao J, Zhu Y, Zhu Q, Qiang B, Yuan J, Peng X and **Qiu M.** Disruption of Necl-1 cell adhesion molecule leads to delayed axonal myelination in the developing nervous system. *J. Neurosci.* In press.