

CURRICULUM VITAE
The Johns Hopkins University School of Medicine



Mohamed H Farah

April, 2016

DEMOGRAPHIC AND PERSONAL INFORMATION

Current Appointments

2010-present Assistant Professor, Department of Neurology, The Johns Hopkins University School of Medicine, Baltimore, MD
DATES Assistant Professor, Department of Neuroscience, The Johns Hopkins University School of Medicine, Baltimore, MD
DATES Faculty member, Graduate Program in Pathobiology, The Johns Hopkins University School of Medicine, Baltimore, MD

Personal Data

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Education and Training

Undergraduate

1994 B.S., Biochemistry, Virginia Tech, Blacksburg, VA

Graduate

2003 PhD, Neuroscience, University of Michigan, Ann Arbor, MI

Postdoctoral

2003-2006 Postdoctoral Fellow, Department of Pathology, The Johns Hopkins University School of Medicine, Baltimore, MD

Professional Experience

2006-2008 Research Associate, Department of Pathology, The Johns Hopkins University School of Medicine, Baltimore, MD
2008-2010: Research Associate, Department of Neurology, The Johns Hopkins University School of Medicine, Baltimore, MD

PUBLICATIONS

Original Research

1. **Farah MH**, Olson JM, Sucic HB, Hume RI, Tapscott SJ, Turner DL. Generation of neurons by transient expression of neural bHLH proteins in mammalian cells. *Development*. 2000;127(4):693-702.
2. **Farah MH**. Cumulative labeling of embryonic mouse neural retina with bromodeoxyuridine supplied by an osmotic minipump. *Journal of Neuroscience Methods*. 2004; 134(2):169-178.
3. Lazarov O, Morfini GA, Lee EB, **Farah MH**, Szodorai A, DeBoer SR, Koliatsos VE, Kins S, Lee VM, Wong PC, Price DL, Brady ST, Sisodia SS. Axonal transport, amyloid precursor protein, kinesin-1, and the processing apparatus: revisited. *J Neurosci*. 2005; 25 (9):2386-2395.

4. Cai H, Lin X, Xie C, Laird FM, Lai C, Wen H, Chiang HC, Shim H, **Farah MH**, Hoke A, Price DL, Wong PC. Loss of ALS2 function is insufficient to trigger motor neuron degeneration in knock-out mice but predisposes neurons to oxidative stress. *J Neurosci*. 2005;25(33):7567-7574.
5. **Farah MH**, Easter SS Jr. Cell birth and death in the mouse retinal ganglion cell layer. *J Comp Neurol*. 2005;489(1):120-134.
6. Laird FM, Cai H, Savonenko AV, **Farah MH**, He K, Melnikova T, Wen H, Chiang HC, Xu G, Koliatsos VE, Borchelt DR, Price DL, Lee HK, Wong PC. BACE1, a major determinant of selective vulnerability of the brain of A β amyloidosis, is essential for cognitive, emotional and synaptic functions. *J. Neurosci*. 2005;25(50):11693-11709.
7. Schlueter PJ, Royer T, **Farah MH**, Laser B, Chan SJ, Steiner DF, Duan C. Gene duplication and functional divergence of the zebrafish insulin-like growth factor 1 receptors. *FASEB J*. 2006;20(8):1230-1232. E462-E471
8. **Farah MH**. Neurogenesis and cell death in the ganglion cell layer of vertebrate retina. *Brain Research Reviews*. 2006; 52(2):264-274.
9. Bar EE, Chaudhry A, **Farah MH**, Eberhart CG. Hedgehog signaling promotes Medulloblastoma survival via Bcl2. *Am J Pathol*. 2007;170(1):347-355.
10. Thomas B, von Coelln R, Mandir AS, Trinkaus DB, **Farah MH**, Leong Lim K, Calingasan NY, Flint Beal M, Dawson VL, Dawson TM. MPTP and DSP-4 susceptibility of substantia nigra and locus coeruleus catecholaminergic neurons in mice is independent of parkin activity. *Neurobiol Dis*. 2007;26(2):312-322
11. **Farah MH**. RNAi silencing in mouse models of neurodegenerative diseases. *Current Drug Discovery*. 2007;4(2):161-167.
12. Laird FM, **Farah* MH**, Ackerley S, Hoke A, Maragakis N, Rothstein JD, Griffin J, Price DL, Martin LJ, Wong PC. Motor neuron disease occurring in a mutant dynactin mouse model is characterized by defects in vesicular trafficking. *J. Neurosci*. 2008;28 (9):1997-2005. * Co-first author
13. Mahairaki V, Xu L, **Farah MH**, Hatfield G, Kizana E, Marbán E, Koliatsos VE. Targeted knock-down of neuronal nitric oxide synthase expression in basal forebrain with RNA interference. *J Neurosci Methods*. 2009;179 (2):292-299.
14. Griffin JW, Pan B, Polley M, Hoffman PN, and **Farah MH**. Measuring nerve regeneration in the mouse. *Exp Neurol*. 2010;223(1):60-71.
15. **Farah MH**, Pan BH, Hoffman PN, Ferraris D, Tsukamoto T, Nguyen T, Wong PC, Price DL, Slusher BS, Griffin JW. Reduced BACE1 activity enhances clearance of myelin debris and regeneration of axons in the injured peripheral nervous system. *J Neurosci*. 2011; 31(15):5744-5754.
16. Pan B, Grünewald B, Nguyen T, **Farah M**, Polydefkis M, McDonald J, Schramm LP, Toyka KV, Höke A, Griffin JW. The lateral thoracic nerve and the cutaneous maximus muscle-A novel in vivo model system for nerve degeneration and regeneration studies. *Exp Neurol*. 2012;236(1):6-18
17. Lee Y, Morrison BM, Li Y, Lengacher S, **Farah MH**, Hoffman PN, Liu Y, Tsingalia A, Jin L, Zhang PW, Pellerin L, Magistretti PJ, Rothstein JD. Oligodendrocyte metabolically support axons and contribute to neurodegeneration. *Nature*. 2012;487(7408):443-448.
18. Wozniak KM, Wu Y, **Farah MH**, Littlefield BA, Nomoto K, Slusher BS. Neuropathy-inducing effects of eribulin mesylate versus paclitaxel in mice with preexisting neuropathy. *Neurotox Res*. 2013;42(3): 338-344.
19. Morrison BM , Tsingalia A, Vidensky S, Lee Y, Jin L, **Farah MH**, Lengacher S, Pellerin L, Magistretti PJ, Rothstein JD. Deficiency in monocarboxylate transporter 1 (MCT1) in mice delays regeneration of peripheral nerves following sciatic nerve crush. *Exp Neurol* . *Exp Neurol*. 2015 Jan;263:325-38.
20. Dali C í, Barton NW, **Farah MH**, Moldovan M, Månsson. J, Nair N, Dunø M, Risom L, Cao H, Pan L, Sellos-Moura M, Corse AM, and Krarup, C. Sulfatide levels correlate with severity of neuropathy in metachromatic leukodystrophy. *Ann Clin Transl Neurol*. 2015 May;2(5):518-33.
21. Tallon C, Russell KA, Sakhalkar S, Andrapallayal A, **Farah MH**. Length-dependent axo-terminal degeneration at the neuromuscular synapses of type II muscle in SOD1 mice. *Neuroscience*. 2016 Jan 15;312:179-89. doi: 10.1016/j.neuroscience.2015.11.018. Epub 2015 Nov 18.

22. Liu L, Fissel JA, Tasnim A, Borzan J, Gocke A, Calabresi, PA, **Farah MH**. Increased TNFR1 expression and signaling in injured peripheral nerves of mice with reduced BACE1 activity. *Neurobiology of Disease*. In press doi: 10.1016/j.nbd.2016.04.002
23. Tasnim A, Rammelkamp Z, Slusher AB, Krystyna Wozniak C, Slusher BS, **Farah MH**. Paclitaxel Causes Degeneration of both Central and Peripheral Axon Branches of Dorsal Root Ganglia in Mice. Accepted April 5, 2016 in *MBC Neuroscience*

FUNDING

Extramural Funding

Current:

7/01/12-3/31/17 BACE1 inhibition in injured peripheral nerve and a neuropathy mouse models
1R01NS079339
NIH/NINDS
\$1,093,750 (direct cost)
PI: Farah, 50%

5/09/12-4/30/17 GCP11 inhibitors for the treatment of chemotherapy-induced neuropathy
R01CA161056-01
NIH/NCI
\$1,448,450
PI: Slusher B
Co-PI: Farah, 15% years 4 and 5

Pending:

Mechanisms by which BACE1 inhibition ameliorates diabetic peripheral neuropathy
1R01NS096010-01
NIH/NINDS
Multi-PI: Caterina and Farah
The first submission of this R01 got a score of 27 percentile
Resubmission planned for July 2016

Enhancing neuromuscular synapse plasticity in mouse models
1R01NS099177-01
NIH/NINDS
PI: Farah

Mechanisms of neuromuscular synapse plasticity induced by BACE1 inhibition
MDA 416750
Muscular Dystrophy Association
PI: Farah

Previous:

2/01/13-1/31/16 Enhancing neuromuscular reinnervation by BACE1 inhibition
MDA 254860
Muscular Dystrophy Association
\$337,500 (direct cost)
PI: Farah, 18%

10/30/13-10/29/15 Evaluation of Merck BACE1 inhibitors as potential therapy to enhance plasticity and remodeling of neuromuscular junctions in a motor neuron disease mouse model
90056463
MERCK

- \$57,476 (direct cost)
PI: Farah, 11%
- 01/01/14-12/31/14 BACE1 inhibition as a treatment for diabetic neuropathy in mice
80026426
Blaustein Pain Research Fund
Johns Hopkins Medical School
\$32,000
PI: Farah, 0%.
- 4/15/11-12/31/12 New strategies for axonal protection in murine models of CMT type 1
MDA 157748
Muscular Dystrophy Association
\$236,586 (direct cost)
PI: Farah, 18%
- 4/15/11-12/31/14 Ultrastructural analysis of nerves with metachromatic leukodystrophy
90045079
Shire pharmaceuticals
\$32,000 (direct cost)
PI: Farah, 6%
- 10/01/11-9/30/13 New tools for the assessment of pathology and therapeutic response in models of
motor neuron diseases
Robert Packard center for ALS research (Johns Hopkins)
\$65,000
PI: Farah, 0%
- 09/01/11-8/31/13 Evaluating effects of BACE1 inhibitors on functional recovery from peripheral nerve
injury and neuropathic pain
Brain Science Institute (Johns Hopkins)
\$50,000
PI: Farah, 0%
- 4/15/11-12/31/12 New strategies for axonal protection in murine models of CMT type 1
MDA 157748
Muscular Dystrophy Association
\$236,586 (direct cost)
PI: Farah, 18%
- 01/01/11-12/31/11 BACE1 inhibition as a therapy for neuropathic pain in mouse models
Blaustein Pain Research Fund (Johns Hopkins)
\$35,000
PI: Farah, 5%
- 12/04/09-12/03/10 BACE1 inhibition as a therapy for neuropathies
Accelerated Translational Incubator Pilot (ATIP) Program (Johns Hopkins)
\$37,500
PI: Farah, 0%

CLINICAL ACTIVITIES

Not applicable

EDUCATIONAL ACTIVITIES

Educational Publications

Invited Review Articles and Chapter books

1. Laird FM, **Farah MH**, Lee H-K, Savonenko, AV, Price DL, Wong PC. β -secretase physiological role and target validation. *Alzheimer's Disease: Advances in Genetics, Molecular, and Cellular Biology*, 2007
2. **Farah MH**. BACE1 influences debris clearance and axonal regeneration in injured peripheral nerve. *J Peripher Nerv Syst*. 2012;17 (Suppl 3) 30-33.
3. Vornov JJ,, Kristen R. Hollinger KR, Jackson PF, Wozniak b KM, **Farah MH**, Majer P, Rais R, Slusher BS. Still NAAG'ing after all these years: the continuing pursuit of GCP11 inhibitors. *Advances in Pharmacology* volume dedicated to Dr. Joseph T. Coyle to be published in June 2016.

Teaching

Classroom instruction

July 2011, Introduction to neuroscience, guest lecturer, summer program, Johns Hopkins University

April 2014, SBE2, guest lecturer, Homewood campus, Johns Hopkins University

Clinical instruction

None

CME instruction

None

Workshops /seminars (dates, course title, role, location)

None

Mentoring

Pre-doctoral

2010-2013: Zoe Rammelkamp, BS, currently second year medical student at University of Maryland

2012-2013: Parisa Moghaddan-Taaheri, BS, current PhD graduate student at University of Maryland

2012-2013: Sean Reader, BS and former Hopkins offensive linemen, currently high school football coach in California

2013-2014: Nirmal Andrapalliyal, BS, currently second year medical student at New Jersey medical school

2010-2015: Aniqa Tasnim, currently PhD student at Harvard University

PhD students in Farah lab:

2014-present: Carolyn Tallon, BS, currently PhD student in the lab. Ms Tallon has presented her thesis project in national and international meetings.

2015-present: John Fissel, BS, currently PhD student in the lab. Mr Fissel has presented his work in Farah's lab at a national meeting

Medical student summer internship

2015: Zoe Rammelkamp, second year medical student at University of Maryland, awarded American Neurology Association (ANA) summer internship 2015 to work on a project in Dr Farah's lab.

Post-doctoral

2014-2015: Yiyue (Cynthia) Zhang, PhD, currently works at FDA. Ms Zhang presented her postdoctoral work at 2 national meetings.

Thesis committee

2013-present: James Pendleton, MD-PhD student, pathobiology, thesis committee member

2014-present: Carolyn Tallon, PhD student, pathobiology, thesis committee member

Educational Program Building / Leadership

2014-present: Director of developmental neuroscience course in Johns Hopkins University at Homewood campus. I teach this 3 credit upper level undergraduate class in the Spring semester. I prepare all the class lectures and give all the lectures twice a week

2016: Director of peripheral nerve neurobiology course in Johns Hopkins University at Homewood campus. I proposed this 3 credit upper level undergraduate class for Fall semester. I will prepare all the class lectures and give all the lectures twice a week

2015-present: Member of Admission Committee of Pathobiology Graduate Program

2016-present: Member of Executive Committee of Pathobiology Graduate Program

RESEARCH ACTIVITIES

Inventions, Patents, Copyrights

5/2/2013 Farah MH. Robust regeneration after peripheral nerve injury. # 20130108645

SYSTEM INNOVATION AND QUALITY IMPROVEMENT ACTIVITIES

Not applicable

ORGANIZATIONAL ACTIVITIES

Journal peer review activities

2011-present: Journal of Neurochemistry

2011-present: Neuroscience Letters

2013-present: Experimental Neurology

2014-present: Neurotherapeutics

2014-present: Neuroscience

2015-present: Molecular and Developmental Evolution

2016-present: Neurobiology of Disease

Advisory Committees, Review Groups/Study Sections (date, sponsor, role)

2007: The John Douglas French Alzheimer's Foundation, ad hoc reviewer

2008-2010: National Science foundation, ad hoc reviewer

NIH study sections

2015 Ad Hoc reviewer for Drug discovery for the Nervous System (ZRG1 MDCN-B (05)

2016 Ad Hoc reviewer for Biophysics of Neural Systems Study Section (BPNS)

Professional Societies

1998-present: Member, society for neuroscience

Conference Organizer, Session Chair

10/2012: Molecular mechanisms of axon degeneration meeting, HHMI Janelia Farm, Session Chair

RECOGNITION

Awards, Honors

1996-2001: Rackham Merit Fellow, University Michigan, Ann Arbor, MI

2004: Excellence in Basic Science Award" Department of Pathology Johns Hopkins School of Medicine, Baltimore, MD

2004-2006: National Research Service Award (1 F32 AGO25658), NIH

2005-2007: The French Foundation Fellowship, the John Douglas French Alzheimer's Foundation

Invited Talks, Panels

- 06/26/2011 Speaker, PNS meeting "Paclitaxel causes degeneration of myelinated PNS and CNS axons of the DRG in mice", Potomac, MD
- 04/01/2011 Speaker, annual Robert Packard center for ALS research symposium "New tools for the assessment of pathology and therapeutic responses in models of motor neuron diseases" Baltimore MD
- 02/06/2012 Speaker, Clinical neuroscience seminar series "Influence of Beta Secretase of Alzheimer's Disease (BACE1) on Peripheral Nerve Regeneration", JHU, Baltimore, MD
- 03/08/2012 Speaker, annual Robert Packard center for ALS research symposium "New tools for the assessment of pathology and therapeutic responses in models of motor neuron diseases" Baltimore MD
- 04/25/2012 Speaker, University of Maryland Medical School "BACE1 in Healthy and Injured Peripheral Nerves", Baltimore MD
- 05/08/2012 Speaker, Blaustein center seminar "BACE1 in healthy and injured peripheral nerves", JHU, Baltimore, MD
- 10/7-10/2012 Speaker, molecular mechanisms of axon degeneration meeting, "Length-dependent axo-terminal degeneration in the lateral thoracic nerve of the SOD1 ALS mouse model". HHMI conference, Janelia Farm, VA.
- 11/07/2012 Seminar, Pittsburgh Institute for neurodegenerative diseases, "Influence of Beta Secretase of Alzheimer's Disease (BACE1) on Peripheral Nerve Regeneration" Pittsburgh University, Pittsburgh, PA
- 02/20/2013 Seminar, Merck Research Laboratories, Merck & Co Inc, "BACE1 Inhibition in Peripheral Nerve Regeneration Models", New Jersey campus, NJ
- 02/27/2013 Speaker, annual Robert Packard center for ALS research symposium "Update on new tools for the assessment of pathology and therapeutic responses in models of motor neuron diseases", Baltimore MD
- 05/07/2013 Seminar, the department of neuroscience, "Genetic and Pharmacological Manipulations of BACE1 Activity Regulate Peripheral Nerve Regeneration in Mice" Texas A&M University, TX
- 11/13/2014 Speaker, nanosymposium at society for neuroscience meeting "Increased TNFR1 expression and signaling correlates with enhanced myelin debris clearance in injured peripheral nerve of mice with reduced BACE1 activity". San Diego, CA
- 04/09/2014 Speaker, "Axonal regeneration" at Friday seminar series for the postdoctoral fellows in Interdisciplinary Training Program in Biobehavioral Pain Research (Grant NS070201), school of Nursing, JHU, Baltimore, MD
- 02/28/2015 Invited speaker at CINP symposium, "Effect of chemotherapy on CNS and PNS axons and comparison among neuropathies caused by chemotherapy agents in mice" at University of California at Santa Barbara, CA
- 9/25/2015 Invited international panel talk "Reducing BACE1 activity via pharmacological and genetic intervention improves neuromuscular junction remodeling in both ALS and partial motor axon injury models" at the 3rd Ottawa International Conference on Neuromuscular Biology, Disease and Therapy, Ottawa, Canada
- 10/20/2015 Speaker, nanosymposium at society for neuroscience meeting "Inhibition of BACE1 in the SOD1G93A mouse model of ALS enhances neuromuscular junction remodeling". Chicago, IL
- 11/04/2015 Invited seminar speaker "Augmenting axon plasticity in motor neuron disease and diabetic neuropathy models", Laboratory of Biology at Scuola Normale Superiore, Pisa, Italy
- 11/06/2015 Invited seminar speaker "Axon regeneration and sprouting in motor neuron disease and diabetic neuropathy models" University of Leuven – KU Leuven, Vesalius Research Center, Laboratory of Neurobiology, Belgium