CURRICULUM VITAE
Haruki Higashimori, Ph.D.

Education

University of California at Davis. Department of Physiology & Membrane Biology 9/1998-12/2004

- Ph.D. Physiology.
  Mentor: Dr. Richard Carlsen. Dissertation: Systemic Inductive Mechanisms of Burn-Induced Systemic Peripheral Motor and Sensory Neuropathy.

University of California at Davis. Department of Animal Science 9/1996-6/1998

- M.S. Animal Science.
  Mentor: Dr. Janet Roser. Thesis: Purification of Equine Inhibin.

California Polytechnic State University, San Luis Obispo. Department of Animal Science 9/1990-6/1995

- B.S. Animal Science; Minor: Biotechnology.

Professional Experience

Instructor (Research), Brown University School of Medicine 08/2018-Present

- Identification of Circadian Locomotor Output Cycles Kaput (CLOCK) and its downstream PARb-ZIP transcription factors activity-dependent protein regulation and synaptic alteration in the epileptic circuit developmental process and specific inhibitory neurocircuit deficiency caused by human focal epileptogenesis.
- Investigate the role of sodium hydrogen exchanger 6 (Nhe6) in cortical and hippocampus inhibitory synaptic development and epileptogenesis.
- Electrophysiological analysis of citrate transporter (slc13a5) disorder in hippocampus.
- Characterize CLOCK activity-associated β-amyloid accumulation in Alzheimer's animal model.
- Constructed field electrophysiology rig and instructed lab members in electrophysiological experiment procedures

Research Assistant Professor, Tufts University School of Medicine 02/2016-03/2018

- Identified the mechanisms that regulate mRNA translation in perisynaptic astrocyte processes (PAPs) during synaptic development in mouse model of developmental disorder (Fragile X Syndrome).
- Investigated microRNA-mediated astroglial GLT1 dysregulation in Fragile X Syndrome.
- Development and characterization of human dental pulp stem cell-derived astrocyte cell culture.

Postdoctoral Research Scholar, Tufts University School of Medicine 09/2010-01/2016

- Conducted *in vivo* and *in vitro* studies investigating novel therapies for autism, and other CNS disorders.
- Performed various cell culture procedures, such as primary neuronal and astrocyte cell cultures of different brain regions and in the spinal cord, and mouse embryonic stem cell cultures to differentiate to motor neurons.
- Obtained cell-specific transcriptome data by making use of bacteria artificial chromosome-translating ribosome affinity purification (BAC-TRAP) and RNA sequencing.
- Mouse behavior recording and analysis (including open field, social interaction, and audiogenic seizure).
- Trained, mentored and supervised junior scientists, including 5 graduate and 3 undergraduate students.
- Taught neuroscience laboratory techniques class (NRSC 233; Western blot, immunohistochemistry, etc.) for first-year graduate students and also taught the course for 3rd year psychology residents.

Postdoctoral Fellow, Georgia Health Science University 03/2008-08/2010

- Investigated neuro-glia-vascular coupling mechanisms associated with novel astrocytic and neuronal ion channels to decipher the mechanism and potential treatment for hypertension and other vasculature-associated disorders.
- Dual slice electrophysiology recording with confocal live cell imaging in neuron and glial cells.

Postdoctoral Fellow, University of Alabama at Birmingham 01/2005-12/2007

- Investigated the role of the astrocytic channel Kir4.1 in potassium buffering and cell cycle regulation in glioblastoma cells for identifying new target treatment for brain cancer.
- Cell proliferation and cell cycle analysis by florescence activated cell sorting.
- Conducted *in vitro* cDNA plasmid and shRNA transfections in neuron and glial cells and *in vivo* adeno-associated virus transfection into cortex.
- Generated genetically manipulated glioblastoma cell lines.

Graduate research assistant, University of California at Davis 01/2000-12/2004

- Characterized neural deficits and examined the systemic and cellular mechanisms underlying burn-induced systemic peripheral motor and sensory neuropathy.
- Performed *in vivo* electrophysiological experiments for sciatic nerve conduction velocity.
- ELISA and Western blots to analyze various inflammatory molecules.

Graduate research assistant, University of California at Davis 09/1996-09/1999

- Purified equine inhibin and developed polyclonal inhibin antibodies to detect equine granulosa theca cell tumor.
- Ran radio-immuno assays and ELISA for inhibin and various other reproductive hormones.

Selected Peer-Reviewed Publications

1. Men, Y., **Higashimori, H.**, Reynolds, K., Tu, L., Jarvis, R., Yang, Y. (2022). Functionally clustered mRNAs are distinctly enriched at cortical astroglial processes and are preferentially affected by FMRP deficiency. *J Neurosci.* Jul 20;42(29):5803-5814. PMID: 35701158.
2. Jin S., **Higashimori H.**, Schin C., Tamoshiro A., Men Y., Chiang MSR., Jarvis R., Cox D., Feig L., Yang Y. (2021) Astroglial FMRP modulates synaptic signaling and behavior phenotypes in FXS mouse model. *Glia* Mar;69(3):594-608 doi:10.1002/glia.23915.
3. Men Y, Yelick J, Jin S, Tian Y, Chiang MSR, **Higashimori H.**, Brown E, Jarvis R, Yang Y. (2019). Exosome reporter mice reveal the involvement of exosomes in mediating neuron to astroglia communication in the CNS. *Nat Commun*. Sep 12;10(1):4136. doi:10.1038/s41467-019-11534-w PMID 31515491
4. Morel L., Chiang MSR., **Higashimori H.**, Shoneye T., Iyer LK., Yelick J., Tai A., Yang Y. (2017) Molecular and Functional Properties of Regional Astrocytes in the Adult Brain. *J Neurosci*. Sep 6;37(36):8706-8717.
5. **Higashimori H.,** Schin CS., Chiang MS., Morel L., Shoneye TA., Nelson DL., Yang Y. (2016) Selective Deletion of Astroglial FMRP Dysregulates Glutamate Transporter GLT1 and Contributes to Fragile X Syndrome Phenotypes In Vivo. *J Neurosci.* Jul 6;36(27):7079-94.
6. Ng S., **Higashimori H.**, Tolman M., and Yang Y. (2015) Suppression of adenosine 2a receptor (A2aR)-mediated adenosine signaling alleviates disease progression in mouse model of Amyotrophic Lateral Sclerosis (ALS). *Exp. Neurol.* May, 267, 115–122.
7. Morel L., **Higashimori H.**, Tolman M., Yang Y. (2014) VGluT1^{+} neuronal glutamatergic signaling regulates postnatal developmental maturation of cortical protoplasmic astroglia. *J. Neurosci.* Aug 13;34(33):10950-10962.
8. **Higashimori H.**, Morel L., Huth J., Dulla C., Taylar A., Freeman M., Yang Y. (2013) Astroglial FMRP-dependent translational down-regulation of mGluR5 underlies glutamate transporter GLT1 dysregulation in the Fragile X Mouse. *Hum Mol Genet.* May 15;22(10):2041-54.
9. **Higashimori, H.**, Yang, Y. (2012) Imaging analysis of neuron to glia interaction in microfluidic culture platform (MCP)-based neuronal axon and glia co-culture system. *J. Vis. Exp.* (68), e4448, DOI: 10.3791/4448.

Complete List of Published Work in MyBibliography (23 peer-reviewed publications):
https://www.ncbi.nlm.nih.gov/sites/myncbi/1blg9hyCrIegHI/bibliography/57224400/public/?sort=date&direction=ascending

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Manuscript in preparation

1. Role of sodium hydrogen exchange 6 (Nhe6) in inhibitory neuron integration and synapse formation *in vivo*: initiation of epileptic event mechanism

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Professional Development

- Pathogenesis of Neuro-Immunologic Diseases, Woods Hole marine biology summer course 2005
- Autism spectrum disorders workshop, Cold Spring Harbor Laboratory 2015

Affiliations

Society for Neuroscience (2005-present), International Society for Autism Research (2012-present)