

Eric D. Melonakos

CONTACT INFORMATION	Department of Bioengineering The University of Utah	<i>Website:</i> www.neuronphysics.com <i>GitHub:</i> emelon8
RESEARCH INTERESTS	Hippocampal electrical rhythms, neuroelectrophysiology, computational neuroscience, gain modulation in neurons, learning and memory, mechanisms of anesthetic action.	
EDUCATION	The University of Utah , Salt Lake City, Utah, USA	
	Ph.D., Bioengineering	Expected Graduation: May 2017
	Advisors: Professors Fernando R. Fernandez and John A. White, Neuronal Dynamics Laboratory	
	Thesis Topic: <i>Gain and firing rate modulation of cholinergic neurons in the medial septum-diagonal band of Broca and the mechanism of cholinergic suppression of hippocampal sharp wave-ripples</i>	
	M.S., Bioengineering	May 2016
	Advisor: Professor Chuck A. Dorval, Neural Information Laboratory	
	M.S., Clinical Investigation	Expected Graduation: May 2017
	Program is focused on training Ph.D. students in translational research Funding through the University of Utah's HHMI Med into Grad Program	
	New York University, Shanghai , Shanghai, China	July 2016
	2016 Computational and Cognitive Neuroscience Summer School	
	Learned techniques for modeling single neurons, perception, decision-making, object recognition, attention, and machine learning	
	Project topic: <i>Dendritic A-current increases mutual information between dendritic synaptic conductance and somatic voltage</i>	
	Brigham Young University , Provo, Utah, USA	
	B.S., Neuroscience	April 2010
	Research Topic: <i>Effects of anesthesia on the lateral pressure profile of lipid membranes</i>	
	Research Advisor: Professor David D. Busath, Biophysics Great Lab	
WORK IN PROGRESS	Melonakos ED , White JA, Fernandez FR. Mechanisms of cholinergic suppression of hippocampal sharp wave-ripples.	
REFEREED JOURNAL PUBLICATIONS	Ohtani T, Nestor PG, Bouix S, Newell D, Melonakos ED , McCarley RW, Shenton ME, Kubicki M (2017) Exploring the neural substrates of attentional control and human intelligence: Diffusion tensor imaging of prefrontal white matter tractography in healthy cognition. <i>Neuroscience</i> 341: 52-60. doi:10.1016/j.neuroscience.2016.11.002	
	Melonakos ED , White JA, Fernandez FR (2016) Gain modulation of cholinergic neurons in the medial septum-diagonal band of Broca through hyperpolarization. <i>Hippocampus</i> 26(12): 1525-1541. doi:10.1002/hipo.22653	

Ohtani T, Bouix S, Lyall AE, Hosokawa T, Saito Y, **Melonakos E**, Westin CF, Seidman LJ, Goldstein J, Mesholam-Gately R, Petryshen T, Wojcik J, Kubicki M (2015) Abnormal white matter connections between medial frontal regions predict symptoms in patients with first episode schizophrenia. *Cortex* 71: 264-276.
doi:10.1016/j.cortex.2015.05.028

Ohtani T, Bouix S, Hosokawa T, Saito Y, Eckbo R, Ballinger T, Rausch A, **Melonakos E**, Kubicki M (2014) Abnormalities in white matter connections between orbitofrontal cortex and anterior cingulate cortex and their associations with negative symptoms in schizophrenia: A DTI study. *Schizophr Res* 157: 190-197.
doi:10.1016/j.schres.2014.05.016

Nelson SC, Neeley SK, **Melonakos ED**, Bell JD, Busath DD (2012) Fluorescence anisotropy of diphenylhexatriene and its cationic trimethylamino derivative in liquid dipalmitoylphosphatidylcholine liposomes: Opposing responses to isoflurane. *BMC Biophys* 5: 5.
doi:10.1186/2046-1682-5-5

Melonakos ED, Shenton ME, Rathi Y, Terry DP, Bouix S, Kubicki M (2011) Voxel-based morphometry (VBM) studies in schizophrenia-can white matter changes be reliably detected with VBM? *Psychiatry Res Neuroimaging* 193: 65-70.
doi:10.1016/j.pscychresns.2011.01.009

CONFERENCE
PUBLICATIONS

Melonakos ED, White JA, Fernandez FR. History-dependent changes in spiking patterns of cholinergic neurons in the medial septum. 2014. *Poster presented at the Society for Neuroscience's 2014 Annual Meeting.*

Fowler M, Cardon B, **Melonakos ED**, Brasfield N, Bell JD, Busath DD. Simulation of Isoflurane and Fluorescent Probes in a DPPC Bilayer. 2012. *Poster presented by M. Fowler at the University of Utah's 2012 Annual Snowbird Neuroscience Symposium.*

Melonakos ED, White JA. History-Dependent Accommodation and Neuronal Phase-Locking to Theta Inputs in the Medial Septum. 2012. *Poster presented at the 2012 Research Trainee Symposium: Molecular Medicine and Medical School Research Programs.*

Melonakos ED, White JA. Anesthetics Affect the Frequency-Current Curves of Individual Neurons. 2011. *Poster presented at the 2011 Utah Biomedical Engineering Conference and at the University of Utah's 2011 Annual Snowbird Neuroscience Symposium.*

Cardon B, **Melonakos E**, Brasfield N, Ha I, Bell JD, Busath DD. Self-Distribution of Dye and Isoflurane in the DPPC Bilayer. *Biophysical Journal*. 2012;100(3): 632a-632a. *Poster presented by N. Brasfield at the 2011 Biophysical Society meeting in Baltimore, MD.*
doi:10.1016/j.bpj.2010.12.3632

Ohtani T, Kubicki M, Bouix S, Terry D, Rausch A, **Melonakos E**, Pelavin P, Alvarado J, LaVenture A, De Siebenthal J, McCarley RW, Shenton ME. Abnormalities in White Matter Connectivity between Orbitofrontal Cortex and Anterior Cingulate Cortex in Schizophrenia. *Biological Psychiatry*. 2010;67(9): 875. *Poster presented by T. Ohtani at the 2010 Society of Biological Psychiatry Convention, New Orleans, LA.*

Melonakos E, Shenton M, Rathi Y, Bouix S, Kubicki M. Can Whole Brain Voxel-Based Morphometry Studies Applied to DTI Data Localize White Matter Changes in Schizophrenia? *Schizophrenia Bulletin*. 2009;35(Supplement 1): 202-203. *Poster presentation at the 2009 International Congress on Schizophrenia Research, San Diego, CA.*

Terry D, Rausch A, Alvarado J, **Melonakos E**, Markant D, Westin CF, Kikinis R, Siebenthal J, Shenton M, Kubicki M. White matter properties of emotion related connections in schizophrenia. 2009. *Mysell Harvard Research Day, Psychiatry Annual Meeting, 2009*.

Link: http://pnl.bwh.harvard.edu/pub/papers_html/TerryMysell2009.html

Melonakos E, Terry D, Markant D, Rausch A, Alvarado J, Kikinis R, Westin CF, Shenton M, Kubicki M. White Matter Properties of Orbitofrontal Connections in Schizophrenia. *Biological Psychiatry*. 2009;65(8)(Supplement S): 204S. *Poster presentation at the 2009 Society of Biological Psychiatry Convention, Vancouver, BC*.

Melonakos E, Shenton M, Rathi Y, Bouix S, Kubicki M. Can Whole Brain Voxel-Based Morphometry Studies Applied to DTI Data Localize White Matter Changes in Schizophrenia? *Biological Psychiatry*. 2009;65(8)(Supplement S): 204S–205S. *Poster presentation at the 2009 Society of Biological Psychiatry Convention, Vancouver, BC*.

OTHER
PUBLICATIONS

Melonakos ED, White JA, Fernandez FR (2016) Cover Image, Volume 26, Issue 12. *Hippocampus* 26(12): C1.
doi:10.1002/hipo.22677

Shenton ME, Turetsky BI. Understanding Neuropsychiatric Disorders: Insights from Neuroimaging. Cambridge: Cambridge University Press. 2011. *I created Figure 1.4 on page 19*.

TEACHING
EXPERIENCE

University of Utah, Salt Lake City, Utah, USA
Department of Bioengineering

Graduate Teaching Assistant January 2012 to May 2012
Teaching Assistant for BIOEN 3301: Computation Methods for Bioengineers, Spring Semester, 2012
Held weekly lab hours to help students with MATLAB programming concepts and practice
Responsible for grading assignments and tests

Brigham Young University, Provo, Utah, USA
Department of Physiology and Developmental Biology

Volunteer Teaching Assistant June 2010 to August 2010
Helped others learn Chemistry at Harvard Molecular Mechanics (CHARMM) software package
Graded molecular modeling assignments

Department of Chemistry and Biochemistry

Teaching Assistant September 2008 to December 2008
Instructor for CHEM 351: Organic Chemistry I, Fall Semester, 2008 (2 sections)
Responsible for two weekly 1 hour lectures and grading tests

SERVICE
EXPERIENCE

The Church of Jesus Christ of Latter-day Saints
Taiwan Taichung Mission, Taichung, Taiwan

Volunteer Church Missionary June 2005 to July 2007
Led proselytizing efforts of missionaries in several Taiwanese cities
Administered and taught weekly English classes

AWARDS AND
ACHIEVEMENTS

- Coursera: Andrew Ng's (completed) and Geoffrey Hinton's (in progress) machine learning courses
- Full Tuition Scholarship (BYU)
- Mary Lou Fulton Chair Internship Grant (BYU)
- Dean's List (BYU)
- 800 GRE Quantitative Score (2009)
- Moderate Proficiency in Mandarin Chinese
- Eagle Scout

COMPUTER SKILLS

- Languages (proficiency): MATLAB(high), Python (medium), C/C++ (medium), L^AT_EX(low)
- Developed a Nernst Potential Android app
- Linux & Windows OS