

JOSHUA P. NEUNUEBEL, Ph.D.
Blue highlights entries since appointment at UD

CONTACT INFORMATION

University of Delaware
Psychological and Brain Sciences
107 McKinly Lab
Newark, DE 19716

Cell: (979) 739-5737
Office: (302) 831-4811
Lab: (302) 831-3387
E-mail: jneun@udel.edu
Website: neunuebelneurosciencelab.com

ACADEMIC POSITIONS

Aug. 2014 – Present Assistant Professor; **University of Delaware**
Department of Psychological Brain Sciences

EDUCATION

Dec 2010 **Ph.D.** in Neuroscience, Department Neurobiology and Anatomy
University of Texas Health Science Center at Houston, Houston, TX
May 2004 **M.S.** in Biology, Department of Biology
Texas A&M University, College Station, TX
May 2001 **B.S.**, Cell and Molecular Biology
Texas A&M University, College Station, TX

RESEARCH EXPERIENCE

Jan 2011 – July 2014 Postdoctoral Fellow; **HHMI Janelia Research Campus**
Advisor: Dr. Roian Egnor, Ph.D.
Dec 2010 – Jan 2011 Postdoctoral Fellow; **Johns Hopkins University**
Advisor: James J. Knierim, Ph.D.
April 2009 – Dec 2010 Visiting Doctoral Student; **Johns Hopkins University**
Advisor: James J. Knierim, Ph.D.
Sept 2004 – Dec 2010 Doctoral Student; **University of Texas Health Science Center at Houston**
Advisor: James J. Knierim, Ph.D.
Sept 2001 – March 2004 Masters Student; **Texas A&M University**
Advisor: Mark J. Zoran, Ph.D.

GRANT SUPPORT

External Support

Nov 2005 – Sept 2007 NIH Neuroscience Departmental Training Grant - T32 NS07467, University of Texas Health Science Center at Houston

Internal Support

June 2015 – May 2017 **University of Delaware Research Foundation (\$35,000)**

June 2015 – May 2016 **General University Research Grant (\$8,137)**

RESEARCH INTERESTS

- Neural information processing
 - Social behavior
 - Autism
 - Communication
 - Reproductive behavior
 - Animal behavior
 - Mouse ultrasonic vocalizations
 - Dominance hierarchies
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PUBLICATIONS

Peer reviewed

Knierim JJ, and **Neunuebel JP**. Tracking the flow of hippocampal computation: Pattern separation, pattern completion, and attractor dynamics. *Neurobiol Learn Mem*. 2015 Oct 26; pii: S1074-7427(15)00188-4. doi: 10.1016/j.nlm.2015.10.008.

J.P. Neunuebel, A.L. Taylor, B.J. Arthur, and S.E. Roian Egnor. Female mice ultrasonically interact with males during courtship displays. *eLife*. 2015 May 28; 4. doi: 10.7554/eLife.06203

** Featured in eLife Podcast (<http://elifesciences.org/podcast/episode21>)

** Feature in Science News

(<http://news.sciencemag.org/news/2015/09/female-mice-croon-love-songs-too>)

** Featured in Scientific American (www.scientificamerican.com/podcast/episode/female-vocalists-are-in-the-mouse-house/)

** Featured in NPR (<http://delawarepublic.org/post/ud-study-says-female-mice-sing-back-when-courted-males#stream/0>)

** Featured in National Geographic Channel (<http://www.natgeotv.com.au/animals/female-mice-sing-for-sex.aspx>)

J.P. Neunuebel and J.J. Knierim. CA3 Retrieves Coherent Representations from Degraded Input: Direct Evidence for CA3 Pattern Completion and Dentate Gyrus Pattern Separation. *Neuron*. 2014 Jan 22; 81(2):416-27

** Previewed in Neuron, 2014, doi: 10.1016/j.neuron.2014.01.004

** Recommended by Faculty of 1000 as special significance, September 8, 2014

J.J. Knierim, **J.P. Neunuebel**, S.S. Deshmukh. Functional correlates of the lateral and medial entorhinal cortex: Objects, path integration, and local-global reference frames. *Proc. R. Soc. B*. 2013 Dec 23; 369(1635).

J.P. Neunuebel, D. Yoganarasimha, G. Rao, and J.J. Knierim. Conflicts between local and global spatial frameworks dissociate neural representations of the lateral and medial entorhinal cortex. *J Neurosci*. 2013 May 29; 33(22):9246-58.

** Featured Article

** Highlighted in Current Biology, 2013, doi: 10.1016/j.cub.2013.07.018

J.P. Neunuebel and J.J. Knierim. Spatial firing correlates of physiologically distinct cell types of the rat dentate gyrus. *J Neurosci*. 2012 March 14; 32(11):3848-58

** Featured Article

J.J. Siegel, **J.P. Neunuebel**, J.J. Knierim. Dominance of the proximal coordinate frame in determining the locations of hippocampal place cell activity during navigation. *J Neurophysiol.* 2008 Jan; 99(1):60-76.

J.P. Neunuebel and M.J. Zoran. Electrical Synapse Formation Disrupts Calcium-Dependent Exocytosis, but not Vesicle Mobilization. *Synapse* 2005 June 1; 56(3):154-65.

CONFERENCE PRESENTATIONS AND ABSTRACTS

Daniel Sangiamo and **J.P. Neunuebel**. The Relationship Between Ultrasonic Vocalizations and Agonistic Behaviour. 2015, Summer Scholars Poster Session.

Xiixin Zhong and **J.P. Neunuebel**. Examining the Role of Mouse Ultrasonic Vocalizations During Exploration in a Novel Environment. 2015, Summer Scholars Poster Session.

J.P. Neunuebel, and S.E.R. Egnor. Localization of ultrasonic vocalizations emitted by both male and female mouse models of Fragile X while socially interacting. Program No. 584.01. 2013 Neuroscience Meeting Planner. San Diego, CA: Society for Neuroscience, 2013. Online.

K. Seagraves, **J.P. Neunuebel**, and S.E.R. Egnor. Female rejection and male vocal behavior may play an intimate role in the mating behavior of the house mouse. Program No. 584.02. 2013 Neuroscience Meeting Planner. San Diego, CA: Society for Neuroscience, 2013. Online.

J.P. Neunuebel, A.L. Taylor, and S.E.R. Egnor. Ultrasonic vocal interaction between male and female mice during courtship. Society for Neuroscience Satellite Meeting, Mechanisms of Communication: Critical Periods and Social Learning, 2013.

J.P. Neunuebel, A.L. Taylor, and R.S.E. Egnor. Identifying the source of mouse ultrasonic vocalizations during social interaction using a four-channel microphone array. Program No. 296.05. 2012 Neuroscience Meeting Planner. New Orleans, LA: Society for Neuroscience, 2012. Online.

J.P. Neunuebel, A.L. Taylor, and R.S.E. Egnor. Identifying the source of mouse ultrasonic vocalizations during social interaction using a four-channel microphone array. Neural and Genetic Basis of Vocal Communication, New Orleans, LA: Society for Neuroscience Satellite Meeting, 2012.

J.P. Neunuebel, A.L. Taylor, and R.S.E. Egnor (2012). Localizing the source of mouse ultrasonic vocalizations using a four-channel microphone array. *Front. Behav. Neurosci. Conference Abstract: Tenth International Congress of Neuroethology.* doi: 10.3389/conf.fnbeh.2012.27.00326.

J.P. Neunuebel and J.J. Knierim. Cells of the dentate gyrus polymorphic layer have spatial firing with multiple, irregularly distributed fields. Program No. 405.16. *2010 Abstract Viewer/Itinerary Planner.* San Diego, CA: Society for Neuroscience, 2010. Online.

J.P. Neunuebel, G. Rao, D. Yoganarasimha, and J.J. Knierim. Differential control of lateral and medial entorhinal cortex by local and global cues. Program No. 100.4. *2009 Abstract Viewer/Itinerary Planner.* Chicago, Ill: Society for Neuroscience, 2009.

J.P. Neunuebel and J.J. Knierim. CA3 place fields respond more coherently than dentate gyrus fields in a local-global cue-mismatch manipulation. Program No. 90.4. *2008 Abstract Viewer/Itinerary Planner.* Washington, DC: Society for Neuroscience, 2008. Online.

J.J. Siegel, **J.P. Neunuebel**, G. Rao, J.J. Knierim. Increased partial remapping rates are associated with proportional decreases in the fidelity of place activity by cells that maintain similar firing fields within hippocampal ensembles. Program No. 205.18. *2007 Abstract Viewer/Itinerary Planner.* San Diego, CA: Society for Neuroscience, 2007. Online.

J.P. Neunuebel, J.J. Siegel, G. Rao, J.J. Knierim. The effects of goal-directed behavior on hippocampal representations of space. Program No. 574.6. *2006 Abstract Viewer/Itinerary Planner.* Washington, DC: Society for Neuroscience, 2006. Online.

J.J. Siegel, **J.P. Neunuebel**, G. Rao, J.J. Knierim. Differences in population coherence of CA3 and CA1 place cell ensembles in a spatial navigation task: pattern completion vs. pattern separation. Program No. 574.7. *2006 Abstract Viewer/Itinerary Planner*. Washington, DC: Society for Neuroscience, 2006. Online.

K.K. Ricks, **J.P. Neunuebel**, M.J. Zoran. Electrical synapse formation disrupts calcium-dependent exocytosis but not vesicle mobilization. Program No. 834.11. *2005 Abstract Viewer/Itinerary Planner*. Washington, DC: Society for Neuroscience, 2005. Online.

J.P. Neunuebel and M.J. Zoran. Mechanism underlying the suppression of chemical neurotransmission in regenerating *Helisoma* neurons. Program No. 898.13. *2003 Abstract Viewer/Itinerary Planner*. Washington, DC: Society for Neuroscience. Online.

J.P. Neunuebel and M.J. Zoran. Calcium dynamics at regenerating synapses in cell culture. Program No. 730.11. *2002 Abstract Viewer/Itinerary Planner*. Washington, DC: Society for Neuroscience, 2002. Online.

PROFESSIONAL EXPERIENCE

AdHoc Reviewer

Neurotoxicology, Journal of Neuroscience, Journal of Neurophysiology, [PLOS ONE](#), [Hippocampus](#)

University Service

[Library Liaison](#), [Animal Facility Scientific Advisory Committee](#), [Behavioral Neuroscience Brown Bag Organizer](#), [Behavioral Neuroscience Bolus Beverage and Data Blitz Organizer](#), [Guest Lecturer NSCI645](#), [Delaware INBRE Summer Scholars Mentor](#)

Service Outside of University

[Dec 2014](#) [Poster Judge; Delaware Neuroscience Research & Poster Symposium](#)

Memberships

[2015 – Present](#) [Association for Psychological Science](#)
[2012 – Present](#) [International Congress of Neuroethology](#)
[2002 – Present](#) [Society for Neuroscience](#)

Development

[Nov 2008](#) [SFN Short Course: Optical Control of Neural Excitability](#)
[Summer 2005](#) [Cold Spring Harbor Laboratory Biology of Memory Course](#)

HONORS AND AWARDS

[Sept 2009](#) [1st place for Graduate Student Systems Research, Johns Hopkins Neuroscience](#)

[Feb 2004](#) [2nd place for Graduate Student Research, Texas A&M Neuroscience](#)

[Sept 2001](#) [Texas A&M College of Science Biology Fellowship](#)

TEACHING EXPERIENCE

[2015](#) [NSCI368; Advance Research in Neuroscience](#)

[2015](#) [PSYC314; Brain and Behavior](#)

[2014](#) [PSYC314; Brain and Behavior Honors](#)

INVITED TALKS

External

- March 2015 [Stress Neurobiology Seminar Series, Children's Hospital of Philadelphia, Philadelphia, PA](#)
- March 2014 Behavioral Neuroscience Colloquium, **University of Delaware**, Newark, DE
- March 2014 Department of Psychology Seminar, **University of Oregon**, Eugene, OR
- Feb 2014 Department of Neuroscience Seminar, **University of Arizona**, Tucson, AZ
- April 2012 Bioacoustics and Vocal Communication in Mice, **Pasteur Institute**, Paris, France
- Jan 2011 Bodian Seminar, **Johns Hopkins University**, Baltimore, MD
- March 2010 Egnor Lab Postdoctoral Talk, **HHMI Janelia Research Campus**, Ashburn, VA
- March 2010 Isaac Lab Postdoctoral Talk, **National Institutes of Health**, Bethesda, MD

Internal

- April 2015 [Life Science Research Facility Group, University of Delaware, Newark, DE](#)
- April 2015 [Social Psychology Brown Bag, University of Delaware, Newark, DE](#)

PRESS COVERAGE

- Nov 2015 ["Female Vocalists Are in the \(Mouse\) House", Scientific American](#)
- Sept 2015 ["Mice Sing Love Songs for Sex", National Geographic Channel](#)
- Sept 2015 ["UD study says female mice sing back when courted by males", Delaware Public Media](#)
- Sept 2015 ["Female mice croon love songs, too", Science](#)
- Sept 2015 ["Songs in the key of mouse", UDaily](#)
- June 2015 ["Check mate", The Naked Scientists](#)
- Nov 2012 ["Catalog of mice cries aids quest to find their meaning", SFARI](#)
- Nov 2013 ["For mice, mating is a dialogue between sexes", SFARI](#)