James R. Hinman

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Academic Positions

2019 – Pres. Assistant Professor, Department of Psychology, University of Illinois at Urbana-Champaign

2019 – Pres. Affiliate, Neuroscience Program, University of Illinois at Urbana-Champaign

Education

2006 – 2012 University of Connecticut
Department of Psychological Sciences
Ph.D., Psychology with concentration in Behavioral Neuroscience
M.A., Psychology with concentration in Behavioral Neuroscience

2004 – 2006 University of Connecticut
B.A., Psychology; Minors: Neuroscience, Philosophy
Summa Cum Laude

1999 – 2000 Skidmore College

Research Experience

2012 – 2019 Postdoctoral Research Associate
Center for Systems Neuroscience
Center for Memory and Brain
Department of Psychological and Brain Sciences
Boston University, Boston, MA
Mentor: **Dr. Michael E. Hasselmo**

2006 – 2012 Behavioral Neuroscience Graduate Student
Department of Psychological Sciences
University of Connecticut, Storrs, CT
Mentor: **Dr. James J. Chrobak**

Summer 2006 Research Assistant
Department of Psychological Sciences
University of Connecticut, Storrs, CT
Mentor: **Dr. Heather L. Read**

2004 – 2006 Undergraduate Research Assistant
Department of Psychological Sciences
University of Connecticut, Storrs, CT
Mentor: **Dr. Etan J. Markus**

Publications

Journal Articles

21. Alexander AS, Carstensen L, **Hinman JR**, Raudies F, Chapman GW, Hasselmo ME (2020) Egocentric boundary vector tuning of the retrosplenial cortex. *Sci Adv* 6: eaaz2322

20. **Hinman JR**, Chapman GW, Hasselmo ME (2019) Neuronal representation of environmental boundaries in egocentric coordinates. *Nat Commun* 10: 2772.

    *Selected as a *Nature Communications* Editor's Highlight in *From Brain to Behavior*
    *News coverage [Altmetric]

19. **Hinman JR**, Dannenberg H, Alexander AS, Hasselmo ME (2018) Neural mechanisms of navigation involving interactions of cortical and subcortical structures. *J Neurophysiol* 119: 2007 – 2029.

18. Hasselmo ME, **Hinman JR**, Dannenberg H, Stern C (2017) Models of spatial and temporal dimensions of memory. *Curr Opin Behav Sci* 17: 27 – 33.

17. Dannenberg H, **Hinman JR**, Hasselmo ME (2016) Potential roles of cholinergic modulation in the neural coding of location and movement speed. *J Physiol Paris* 110: 52 – 64.

16. **Hinman JR**, Brandon MP, Chapman GW, Climer JR, Hasselmo ME (2016) Multiple running speed signals in medial entorhinal cortex. *Neuron* 91: 666 – 679.

    *Featured in Hayman R, Burgess N (2016) Disrupting the grid cells' need for speed. *Neuron* 91: 502 – 503.
    *Featured in Gonzalez-Sulser A, Nolan MF (2017) Grid cells' need for speed. *Nat Neurosci* 20: 1 – 2.

15. Raudies F, **Hinman JR**, Hasselmo ME (2016) Modelling potential sensory influences on grid cells. *J Physiol* 594: 6513 – 6526.

14. Jacobson TK, Schmidt B, **Hinman JR**, Escabí MA, Markus EJ (2015) Age-related decrease in theta and gamma coherence across dorsal CA1 pyramidale and radiatum layers. *Hippocampus* 25: 1327 – 1335.

13. Long LL, **Hinman JR**, Chen C-M, Stevenson IH, Read HL, Escabí MA, Chrobak JJ (2014) Novel acoustic stimuli can alter locomotor speed to hippocampal theta relationship. *Hippocampus* 24: 1053 – 1058.

12. Long LL, **Hinman JR**, Chen C-M, Escabí MA, Chrobak JJ (2014) Theta dynamics in rat: speed and acceleration across the septotemporal axis. *PLoS One* 9:e97987.

11. Penley SC, **Hinman JR**, Long LL, Markus EJ, Escabí MA, Chrobak JJ (2013) Novel space alters theta and gamma local field potentials across the septotemporal axis of the rodent hippocampus. *Front Syst Neurosci* 7: 20.

10. Schmidt B, **Hinman JR**, Jacobson T, Szkudlarek E, Argraves M, Escabí MA, Markus EJ (2013) Dissociation between dorsal and ventral theta oscillations during a place and response task. *J Neurosci* 33: 6212 – 6224.

9. Jacobson T, Howe MD, Schmidt B, **Hinman JR**, Escabí MA, Markus EJ (2013) Hippocampal theta, gamma and theta-gamma coupling: Effects of aging, environmental change and cholinergic activation. *J Neurophysiol* 109: 1852 – 1865.

8. **Hinman JR**, Penley SC, Escabí MA, Chrobak JJ (2013) Ketamine disrupts theta synchrony across the septotemporal axis of the CA1 region of hippocampus. *J Neurophysiol* 109: 570 – 579.

7. Penley SC, **Hinman JR**, Sabolek HR, Escabí MA, Markus EJ, Chrobak JJ (2012) Theta and gamma coherence across the septotemporal axis during distinct behavioral states. *Hippocampus* 22: 1164 – 1175.

6. Collins-Praino LE, Paul NE, Rychalsky K, **Hinman JR**, Chrobak JJ, Senatus PB and Salamone JD (2011). Pharmacological and physiological characterization of the tremulous jaw movement model, a rodent model of parkinsonian tremor: Potential insights into the pathophysiology of tremor. *Front Syst Neurosci* 5: 49.

5. **Hinman JR**, Penley SC, Long LL, Escabí MA, Chrobak JJ (2011) Septotemporal variation in dynamics of theta: speed and habituation. *J Neurophysiol* 105: 2675 – 2686.

4. Szalkowski CE, **Hinman JR**, Threlkeld SW, Wang Y, LePack A, Rosen GD, Chrobak JJ, LoTurco JJ, Fitch RH (2011) Persistent spatial working memory deficits in rats following *in utero* RNAi of *Dyx1c1*. *Genes, Brain and Behavior* 10: 244 – 252.

3. Collins LE, Galtieri DJ, Brennum LT, Sager TN, Hockemeyer J, Müller CE, **Hinman JR**, Chrobak JJ, Salamone JD (2010) Oral tremor induced by the muscarinic agonist pilocarpine is suppressed by the adenosine A2A antagonist MSX-3 and SCH58261, but not the adenosine A1 antagonist DPCPX. *Pharmacol Biochem Behav* 94: 561 – 569.

2. Sabolek HR, Penley SC, **Hinman JR**, Bunce JG, Markus EJ, Escabí MA, Chrobak JJ (2009) Theta and gamma coherence along the septotemporal axis of the hippocampus. *J Neurophysiol* 101:1192 – 1200.

1. Chrobak JJ, **Hinman JR**, Sabolek HR (2008) Revealing past memories: proactive interference and ketamine-induced memory deficits. *J Neurosci* 28: 4512 – 4520.

Book Chapters

3. Hasselmo ME, **Hinman JR** (2017) Marr's influence on the standard model of hippocampus and the need for more theoretical advances. In: Vaina L, Passingham R (eds.) Computational Theories and their Implementation in the Brain: The Legacy of David Marr. Oxford University Press: Oxford, pp. 133 – 158.

2. Hasselmo ME, **Hinman JR** (2016) Computational Neuroscience: Hippocampus. In: Pfaff D, Volkow N (eds.) Neuroscience in the 21st century. Springer: New York, pp. 3081 – 3095.

1. Schultheiss NW, **Hinman JR**, Hasselmo ME (2015) Models and theoretical frameworks for hippocampal and entorhinal cortex function in memory and navigation. In: Masami, T (ed.) Analysis and Modeling of coordinated multi-neuronal activity. Springer: New York, pp. 247-268.

Conference Abstracts

34. Alexander AS, Carstensen LC, Chapman GW, Raudies F, **Hinman JR**, Hasselmo ME (2019) Egocentric boundary vector tuning of the retrosplenial cortex. *Soc. Neurosci. Abstr.*

33. **Hinman JR**, Chapman GW, Hasselmo ME (2018) Neuronal representation of environmental boundaries in egocentric coordinates. *Soc. Neurosci. Absr.*

32. Carstensen L, Alexander AS, **Hinman JR**, Hasselmo ME (2018) Spatial correlates of the retrosplenial cortex during free exploration. *Soc. Neurosci. Absr.*

31. **Hinman JR,** Chapman GW, Hasselmo ME (2018) Egocentric representation of environmental boundaries in the striatum. *iNav.*
    * awarded prize for "Best Poster"

30. Alexander AS, Carstensen L, **Hinman JR**, Hasselmo ME (2018) Spatial correlates of the retrosplenial cortex during free exploration. *iNav.*

29. Rozeske RR, Wilson EK, Ajabi Z, **Hinman JR**, Brandon MP (2018) Egocentric boundary cell representation in the mouse dorsal medial striatum. *iNav.*

28. **Hinman JR,** Chapman GW, Hasselmo ME (2017) Egocentric representation of environmental boundaries in the striatum. *Soc. Neurosci. Abstr.*710.23.

27. **Hinman JR,** Chapman GW, Hasselmo ME (2016) Representation of environmental boundaries within an egocentric reference frame. *Soc. Neurosci. Abstr*.359.13.

26. **Hinman JR**, Climer JR, Chapman GW, Hasselmo ME (2015) A novel slow (1-3 Hz) oscillatory cell type in the lateral septum. *Soc. Neurosci. Abstr.* 85.01.

25. Climer JR, DiTullio R, **Hinman JR**, Hasselmo ME, Eden U (2015) Examining rhythmicity in extracellular recordings. *Statistical Analysis of Neuronal Data* 7.

24. Climer JR, DiTullio R, **Hinman JR**, Chapman GW, Brandon MP, Hasselmo ME, Eden U (2014) Addressing theta rhythmicity in extracellularly recorded neurons in rat and bat. *Soc. Neurosci. Abstr.* 465.06.

23. Long LL, Norris AA, **Hinman JR**, Chen C-M, Stevenson IH, Read HL, Escabí MA, Chrobak JJ (2014) Novel acoustic stimuli can alter locomotor speed-theta relationship across the septotemporal axis of the hippocampus. *Soc. Neurosci. Abstr.* 751.08.

22. **Hinman JR**, Brandon MP, Chapman IV GW, Hasselmo ME (2013) Speed modulation of medial entorhinal cortical neurons during medial septal inactivation. *Soc. Neurosci. Abstr*. 769.01.

21. **Hinman JR**, Long LL, Escabí MA, Chrobak JJ (2012) Theta dynamics: the relationship between theta frequency and locomotor speed in familiar and novel environments. *Soc. Neurosci. Abstr.* 918.17.

20 Chrobak JJ, Long LL, Escabí MA, **Hinman JR** (2012) Theta dynamics: septotemporal differences in response to habituation, spatial novelty and the absence of expected reward. *Soc. Neurosci. Abstr.* 918.18.

19. Long LL, **Hinman JR**, Escabí MA, Chrobak JJ (2012) Theta dynamics: speed, velocity acceleration and contribution to cognition. *Soc. Neurosci. Abstr.* 918.17.

18. **Hinman JR**, Penley SC, Escabí MA, Chrobak JJ (2011) Ketamine induced disruption in global theta coherence across the septotemporal axis of the hippocampus. *Soc. Neurosci. Abstr.* 938.15.

17. Long LL, **Hinman JR**, Penley SC, Escabí MA, Chrobak JJ (2011) Septotemporal variations in hippocampal theta and other oscillations during REM sleep. *Soc. Neurosci. Abstr.* 938.14.

16. Corriveau JA, **Hinman JR**, Larossa C, Salamone J, Chrobak JJ (2011) "Episodic" memory in the rat: the "short" and "long" retention of a trial-unique, delayed conditional discrimination following NMDA antagonist treatment. *Soc. Neurosci. Abstr.* 938.13.

15. Schmidt B, Argraves M, Szkudlarek E, **Hinman JR**, Jacobson TK, Escabí MA, Markus EJ (2011**)** Theta-gamma modulation along the septotemporal axis during a place and response task. *Soc. Neurosci. Abstr.* 938.10.

14. Jacobson TK, Howe MD, Schmidt B, **Hinman JR**, Bohannon S, Mastro K, Escabí MA, Markus EJ (2011) Hippocampal oscillations in young and aged rats: Response to altered environments. *Soc. Neurosci. Abstr.* 938.20.

13. **Hinman JR**, Penley SC, Long LL, Escabí MA, Chrobak JJ (2010) Septotemporal variation in the effects of speed on the theta rhythm. *Soc. Neurosci. Abstr.* 203.2.

12. Long LL, **Hinman JR**, Penley SC, Escabí MA, Chrobak JJ (2010) Theta/gamma cross frequency coupling across the septotemporal axis of the hippocampus and the effects of ketamine. *Soc. Neurosci. Abstr.* 203.1.

11. **Hinman JR**, Penley SC, Escabí MA, Chrobak JJ (2009) Septotemporal variation in the speed modulation of theta power. *Winter Conf Neurobiol Learn Mem*

10. Penley SC, **Hinman JR**, Escabí MA, Markus EJ, Chrobak JJ (2009) Salience of environmental novelty: Theta power, frequency and coherence within the hippocampus and entorhinal cortex. *Soc. Neurosci. Abstr.* 192.28.

9. **Hinman JR**, Penley SC, Escabí MA, Chrobak JJ (2008) Theta/Gamma synchronization: the effects of the NMDA antagonist ketamine. *Soc. Neurosci. Abstr.* 879.2.

8. Penley SC, **Hinman JR**, Escabí MA, Markus EJ, Chrobak JJ (2008) The effects of novelty and aging on the coherence of theta and gamma in the hippocampus and entorhinal cortex. *Soc. Neurosci. Abstr.* 879.3.

7. Chrobak JJ, **Hinman JR** (2008) Episodic memory, proactive interference and ketamine induced cognitive deficits in the rat. *Soc. Neurosci. Abstr.* 879.1.

6. Schmidt B, **Hinman JR**, Penley SC, Jacobson TK, Ciurylo E, Zhang E, Escabí MA, Markus EJ (2008) Local field potentials in the hippocampus, striatum and nucleus accumbens during a place and response task. *Soc. Neurosci. Abstr.* 389.3.

5. Cleary CE, **Hinman JR**, DiPinto K, Malloy D, Threlkeld SW, Wang Y, Rosen GD, Chrobak JJ, Fitch RH (2008) Assessment of episodic memory performance following early interference with a dyslexia risk gene (Dyx1c1) in male Sprague-Dawley rats. *Soc. Neurosci. Abstr.* 249.3.

4. **Hinman JR**, Sabolek HR, Chrobak JJ (2007) Ketamine induced proactive interference between working and episodic memories in the rat: relation to hippocampal theta. *Soc. Neurosci. Abstr.* 305.8.

3. Schmidt B, Penley SC, **Hinman JR**, Jacobson TK, Fairchild J, Gruenbaum B, Escabí MA, Markus EJ (2007) Oscillations of local field potentials in the rat dorsal hippocampus, dorsal striatum, and nucleus accumbens: Comparing place and response trials. *Soc. Neurosci. Abstr.* 640.7.

2. Sabolek HR, Bunce JG, Penley SC, **Hinman JR**, Chrobak JJ (2006) Ketamine alters synchrony throughout the hippocampal formation. *Soc. Neurosci. Abstr.* 751.12.

1. **Hinman JR**, Brandon MP, Sava S, Markus EJ (2006) Examining the orthogonality of hippocampal place cells across environments. *Soc. Neurosci. Abstr.* 371.2.

Presentations

2020 University of Illinois Urbana-Champaign, Cognitive Psychology Brown Bag
2019 University of Illinois Urbana-Champaign, Cognitive Neuroscience Brown Bag
2019 Spring Hippocampal Research Conference, Taormina, Sicily
2019 University of Wisconsin-Milwaukee, Department of Psychology
2019 University of Illinois Urbana-Champaign, Department of Psychology
2019 Kent State University, Department of Psychological Sciences
2018 University of Connecticut, Department of Psychological Sciences
2016 Brandeis University, Computational Neuroscience Journal Club
2016 McGill University, Douglas Mental Health Research Center
2015 Boston University, Brain, Behavior and Cognition Program
2011 University of California, Los Angeles, Department of Psychology
2011 University of Washington, Department of Psychology
2011 University of Lethbridge, Department of Brain Dynamics
2011 University of Minnesota, Department of Neuroscience
2011 Miami University, Psychology Department
2011 University of Delaware, Department of Psychology
2011 Johns Hopkins University, Department of Neuroscience
2011 SUNY Downstate, Department of Cell Biology

Ad Hoc Reviewer

Current Biology
eNeuro
eLife
Experimental Brain Research
Frontiers in Behavioral Neuroscience
Frontiers in Systems Neuroscience
Hippocampus
iScience
Journal of Chemical Neuroanatomy
Journal of Neurophysiology
Neural Networks
Neurobiology of Learning and Memory
Neuroscience and Biobehavioral reviews
PLOS Computational Biology
PLOS One
Psychopharmacology

Teaching Experience

2020	Brain, Learning and Memory (Psyc 414)
2019 – Pres.	Introduction to Behavioral Neuroscience (Psyc 210)
2015 – 2018	Cellular and Systems Neuroscience
2006 – 2010	Introduction to Psychology Laboratory
2005, ’07, ‘08	UConn Mentor Connection - Summer program that brings high school students into the lab

Service and Membership

2020 – pres.	Neuroscience Program Seminar Committee, University of Illinois Urbana-Champaign
2019 – pres.	Psychology Department Admissions Committee, University of Illinois Urbana-Champaign
2019 – 2020	Neuroscience Program Admissions Committee, University of Illinois Urbana-Champaign
2008 – 2009	Graduate Student Advisory Committee, Department of Psychology, University of Connecticut
2006 – pres.	Society for Neuroscience

Awards and Honors

2018	Interdisciplinary Navigation Symposium Best Poster award
2011	Doctoral Dissertation Fellowship, University of Connecticut
2011	Graduate Summer Research Award, University of Connecticut
2008 – 2010	Neuroscience Graduate Fellowship, University of Connecticut
2006	Summa Cum Laude, University of Connecticut
2006	Phi Beta Kappa National Honor Society
2006	Phi Kappa Phi Honor Society
2005, 2006	New England Scholar, University of Connecticut