Curriculum Vitae

Michael E. Hasselmo
Department of Psychological and Brain Sciences,
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EDUCATION:

1984 -	Oxford University, Oxford, England. D. Phil. - Dept of Experimental Psychology.
1988	Thesis title: Representation and storage of visual information in the temporal lobe.
1980 -	Harvard University, Cambridge, Massachusetts. A.B. *Summa Cum Laude*
1984	Special Concentration in Behavioral Neuroscience. Phi Beta Kappa.

HONORS AND GRANTS:

2015	Hebb Award from International Neural Network Society recognizing achievement in Biological Learning
2013	Named to Board of Reviewing Editors of *Science*
2013	Named Chair of NIH Neurobiology of Learning and Memory (LAM) study section
2013	R01 NIMH MH61492 – renewal – principal investigator
2011	Elected as Fellow of the American Association for the Advacement of Science (AAAS)
2010	Office of Naval Research MURI award – principal investigator
2010	R01 NIMH MH60013 – renewal – principal investigator
2006	R50 NIMH MH71702 - Silvio O. Conte Center grant for Center for Memory and Brain
2002	R01 NIDA DA016454 - Collaborative Research in Computational Neuroscience grant.
2001	American Psychological Association (Division 6) DG Marquis Award for best paper in Behavioral Neuroscience in 2000 (DeRosa and Hasselmo).
1999	R01 NIMH MH61492, MH60013.
1996	Human Frontier Science Program grant.
1994	National Institute of Mental Health FIRST Award.
1993	Office of Naval Research Young Investigator Award.
1991	French Foundation for Alzheimer Research Fellowship.
1984	Rhodes Scholarship.

ACADEMIC POSITIONS:

2014 -	Director, Center for Systems Neuroscience
2007 -	Associate Director, Center for Memory and Brain, Boston University
2007 - 2009	Co-director, National Science Foundation Science of Learning Center grant
2002 -	Professor, Department of Psychology, Center for Memory and Brain, Program in Neuroscience and Center for BioDynamics, Boston University, Boston, MA.
1999-2002	Director of Graduate Studies, Department of Psychology, Boston University.
1998-2002	Associate Professor, Department of Psychology, Boston University, Boston, MA.
1991-1998	Assistant Professor and John L. Loeb Associate Professor, Department of Psychology and Program in Neuroscience, Harvard University, Cambridge, MA.
1988-1991	Post-doctoral research fellow with James M. Bower, Ph.D., Div. of Biology, California Institute of Technology, Pasadena, California.

JOURNAL, CONFERENCE AND REVIEW BOARDS:

Grant review committees: Member NIH LAM Study Section (Administrator: Dr. Wei-Qin Zhao), 2013-2015
NIH Conte Center review committee, multiple individual NIH review committees
Editorial boards: *Science, Hippocampus* Section editor (Computational Neuroscience); *Journal of Neuroscience (Associate Editor), Neurobiology of Learning and Memory; Frontiers in Systems Neuroscience (Associate Editor); Brain Structure and Function; Neural Networks; Neuroinformatics; Network: Computation in Neural Systems*
Guest editor of *Hippocampus* special issue on grid cells (2008); Guest editor for *Neural Networks* special issues on Neuromodulation (2002); IJCNN (2003) and Computational theories of the function of the hippocampus (2005).

Program committee Computational Systems Neuroscience (COSYNE) conference, 2005-2009
Governing board of Computational Neuroscience meeting 2001-2007
International Neural Network Society (INNS) Board of Governors 1996-present, Treasurer 1998-2002
President, International Neural Network Society (INNS), 2003.
Program chair, International Joint Conference on Neural Networks, 2003, Portland, Oregon (735 papers submitted)
Co-chair - Computational Neuroscience conference, Cambridge, MA. July 14-17, 1996.
Publications chair - Neural Information Processing Systems , Denver, CO. Nov. 27-Dec. 2, 1995.

LABORATORY GRANT FUNDING:

5 R01 MH060013 1554-5 Hasselmo (PI) 08/01/99-01/31/20
NIMH $250,000 annual budget
Neuromodulation and Cortical Memory Function
The major goal of this project is to analyze the time course of network dynamics relevant to memory encoding in region CA3 and region CA1 of the hippocampus. Role: PI

2 R01 MH061492 2339-5 Hasselmo (PI) 04/01/08 – 06/30/18
NIMH $250,000 annual budget
Mechanisms of Entorhinal Cortex Function
The major goal of this grant is to perform experiments and develop models of cellular mechanisms and circuit dynamics mediating the function of entorhinal cortex in episodic memory and spatial navigation. Role: PI

ONR MURI N00014-16-1-2832 Hasselmo (PI) 09/01/16-08/31/19
ONR $1,500,000 annual budget
Neural Circuits Underlying Symbolic Processing in Primate Cortex and Basal Gangila
The projects on this MURI grant combine computational modeling and neurophysiological experiments in monkeys and humans to understand the neural circuit mechanisms of symbolic processing in tasks requiring hierachical rules that govern the application and reversal of rules based on associations between cues.
Role: PI

PHY-1444389 Hasselmo (PI) 09/01/14-08/31/17
EAGER: Initiative for Physics and Mathematics of Neural Systems
This grant supports collaborations and interactions between physicists and mathematicians and neuroscientists in developing techniques and models for understanding neural systems.

PUBLICATIONS:

Book (monograph):

Hasselmo, M.E. (2012) *How We Remember: Brain Mechanisms of Episodic Memory*. MIT Press: Cambridge, MA.

Peer-reviewed articles:

Hasselmo, ME, Hinman, JR, Dannenberg, H, Stern, CE (2017) Models of spatial and temporal dimensions of memory. Curr. Opinion Behav. Sci. 17: 27-33. NIHMSID: NIHMS885219

Chrastil ER, Sherrill KR, Aselcioglu I, Hasselmo ME, Stern CE. (2017) Individual differences in human path integration abilities correlate with gray matter volume in retrosplenial cortex, hippocampus, and medial prefrontal cortex. eNeuro. 17;4(2). pii: ENEURO.0346-16.2017. PMCID: PMC5392707.

Hinman JR, Brandon MP, Climer JR, Chapman GW, Hasselmo ME (2016) Multiple running speed signals in medial entorhinal cortex. Neuron, 91(3):666-79. PMCID: PMC4976037

Shay CF, Ferrante M, Chapman GW 4th, Hasselmo ME. (2016) Rebound spiking in layer II medial entorhinal cortex stellate cells: Possible mechanism of grid cell function. *Neurobiol Learn Mem*. 129: 83-98. PMCID: PMC4792788.

Heys JG, Shay CF, MacLeod KM, Witter MP, Moss CF, Hasselmo ME. (2016) Physiological properties of neurons in bat entorhinal cortex exhibit an inverse gradient along the dorsal-ventral axis compared to entorhinal neurons in rat. Journal of Neuroscience 36(16):4591-9.

Ferrante M, Shay CF, Tsuno Y, William Chapman G, Hasselmo ME. (2017) Post-inhibitory rebound spikes in rat medial entorhinal layer II/III principal cells: In vivo, in vitro, and computational modeling characterization. Cereb Cortex. 27(3):2111-2125. PubMed PMID: 26965902. NIHMSID: NIHMS834686

Raudies F, Hinman JR, Hasselmo ME. (2016) Modelling effects on grid cells of sensory input during self-motion. Journal of Physiology (London), 594(22):6513-6526.

Ferrante M, Tahvildari B, Duque A, Hadzipasic M, Salkoff D, Zagha EW, Hasselmo ME, McCormick DA. (2017) Distinct Functional Groups Emerge from the Intrinsic Properties of Molecularly Identified Entorhinal Interneurons and Principal Cells. Cereb Cortex. 27(6): 3186-3207. PMID: 27269961. NIHMSID: NIHMS834683

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. PMCID: PMC5164951

Chrastil ER, Sherrill KR, Hasselmo ME, & Stern CE. (2016) Which way and how far? Tracking of translation and rotation information for human path integration. Human Brain Mapping, 37(10):3636-55.

Stratton P, Hasselmo M, Milford M. (2016) Unlocking neural complexity with a robotic key. J Physiol. 594(22):6559-6567.

Raudies F, Brandon MP, Chapman G,W., Hasselmo ME. (2015) Head direction is coded more strongly than movement direction in a population of entorhinal neurons. *Brain Res*. 1621:355-67. PMCID: PMC4427560

Kraus, B.J., Brandon, M.P., Robinson, R.J., Connerney, M.A., Hasselmo, M.E., Eichenbaum, H. (2015) During running in place, grid cells integrate elapsed time and distance run. *Neuron*, 88(3): 578-589. PMCID: PMC4635558.

Chrastil E.R., Sherrill K.R., Hasselmo M.E., Stern C.E. (2015) There and back again: Hippocampus and retrospenial cortex track homing distance during human path integration. J. Neurosci. 35(46): 15442-52.

Raudies F., Hasselmo M.E. (2015) Differences in visual-spatial input may underlie different compression properties of firing fields for grid cell modules in medial entorhinal cortex. PLoS Comput Biol 11(11): e1004596. PMCID: PMC4652908

Sherrill KR, Chrastil ER, Ross RS, Erdem UM, Hasselmo ME, Stern CE. (2015) Functional connections between optic flow areas and navigationally responsive brain regions during goal-directed navigation. Neuroimage, 118: 386-96.

Tsuno Y, Chapman GW, Hasselmo ME. (2015) Rebound spiking properties of mouse medial entorhinal cortex neurons in vivo. *Eur J Neurosci*., 42(11):2974-84. NIHMSID: 759217

Climer JR, DiTullio R, Newman EL, Hasselmo ME, Eden UT. (2015) Examination of rhythmicity of extracellularly recorded neurons in the entorhinal cortex. *Hippocampus*. 25(4): 460-473. PMCID: PMC4457388.

Erdem UM, Milford MJ, Hasselmo ME. (2015) A hierarchical model of goal directed navigation selects trajectories in a visual environment. *Neurobiol Learn Mem*. 117:109-21.

Tiganj Z, Hasselmo ME, Howard MW. (2015) A Simple biophysically plausible model for long time constants in single neurons. *Hippocampus*. 25(1):27-37. PMCID: PMC4437481.

Chen Z, Lowry S, Jacobson A, Hasselmo ME, Milford M. (2015) Bio-inspired homogeneous multi-scale place recognition. Neural Netw. 72:48-61.

Hasselmo, M.E. Stern, C.E. (2014) Theta rhythm and the encoding and retrieval of space and time. *Neuroimage*, 85: 656-666. PMCID: PMC3918488

Newman E.L., Climer J.R., Hasselmo M.E. (2014) Grid cell spatial tuning reduced following systemic muscarinic receptor blockade. *Hippocampus*. 24(6): 643-655. PMCID: PMC4028397

Hasselmo, M.E., Shay, C.F. (2014) Grid cell firing patterns may arise from feedback interaction between intrinsic rebound spiking and transverse traveling waves with multiple heading angles. *Frontiers Syst. Neurosci*. 8: 201. PMCID: PMC4215619

Gupta K., Beer, N.J., Keller, L.A., Hasselmo, M.E. (2014) Medial entorhinal grid cells and head direction cells rotate with a T-maze more often during less recently-experienced rotations. *Cerebral Cortex*, 24(6): 1630-1644. PMCID: PMC4014184

Erdem, U.M., Hasselmo, M.E. (2014) A biologically inspired hierarchical goal directed navigation model. *J. Physiol. Paris* 108(1): 28-37. PMCID: PMC3949664

Howard MW, MacDonald CJ, Tiganj Z, Shankar KH, Du Q, Hasselmo ME, Eichenbaum H. (2014) A unified mathematical framework for coding time, space, and sequences in the hippocampal region. *J Neurosci*. 34(13):4692-707. PMCID: PMC3965792.

Onslow A.C., Hasselmo M.E., Newman E.L. (2014) DC-shifts in amplitude in-field generated by an oscillatory interference model of grid cell firing. *Front Syst Neurosci*. 8:1. PMCID: PMC3901010.

Raudies F, Zilli EA, Hasselmo ME. (2014) Deep belief networks learn context dependent behavior. *PLoS One*. 9(3):e93250. PMCID: PMC3966868.

Brown TI, Hasselmo ME, Stern CE. (2014) A High-resolution study of hippocampal and medial temporal lobe correlates of spatial context and prospective overlapping route memory. *Hippocampus*. 24(7):819-39. PubMed PMID: 24659134.

Newman, E.L., Hasselmo, M.E. (2014) Grid cell firing properties vary as a function of theta phase locking preferences in the rat medial entorhinal cortex. *Frontiers Syst Neurosci*. 8: 193. PMCID: PMC4196519.

Raudies F, Hasselmo ME. (2014) A model of hippocampal spiking responses to items during learning of a context-dependent task. *Front Syst Neurosci*. 8:178. PMCID: PMC4172020.

Brandon, M.P., Bogaard, A.R., Schultheiss, N.W., Hasselmo, M.E. (2013) Segregation of cortical head direction cell assemblies on alternating theta cycles. *Nature Neuroscience*, 16(6): 739-748. PMCID: PMC3703458.

Heys, J.G., MacLeod, K.M., Moss, C.F., Hasselmo, M.E. (2013) Bat and rat neurons differ in theta frequency resonance despite similar coding of space. *Science*, 340: 363-367.

Hasselmo, M.E. (2013) Neuronal rebound spiking, resonance frequency and theta cycle skipping may contribute to grid cell firing in medial entorhinal cortex. *Philos. Trans. R. Soc. Lond. B. Biol. Sci.* 369(1635): 20120523. PMCID: PMC3866445.

Climer, J.R., Newman, E.L., Hasselmo, M.E. (2013) Phase coding by grid cells in unconstrained environments: Two-dimensional (2D) phase precession. *Eur. J. Neurosci*. 38(4): 2526-2541. PMCID: PMC3912569.

Kraus, B.J., Robinson, R.J., White, J.A., Eichenbaum, H., Hasselmo, M.E. (2013) Hippocampal "Time Cells": Time versus path integration. *Neuron*, 78(6): 1090-1101. PMCID: PMC3913731.

Tsuno, Y., Schultheiss, N.W., Hasselmo, M.E. (2013) In vivo cholinergic modulation of the cellular properties of medial entorhinal cortex neurons. *J. Physiol. (Lond.),* 591(10): 2611-2627. PMCID: PMC3678046.

Newman, E.L., Gillet, S.N., Climer, J.R., Hasselmo, M.E. (2013) Cholinergic blockade reduces theta-gamma phase amplitude coupling and speed modulation of theta frequency consistent with behavioral effects on encoding. J. Neurosci. 33(50): 19635-19646. PMCID: PMC3858632.

Sherrill, K.R., Erdem, U.M., Ross, R.S., Brown, T.I., Hasselmo, M.E., Stern, C.E. (2013) Hippocampus and retrosplenial cortex combine path integration signals for successful navigation. J. Neurosci. 33(49): 19304-19313. PMCID: PMC3850045.

Schon, K., Ross, R.S., Hasselmo, M.E., Stern, C.E. (2013) Complementary roles of medial temporal lobes and mid-dorsolateral prefrontal cortex for working memory for novel and familiar trial-unique visual stimuli. *Eur. J. Neurosci*. 37(4):668-678.

Yoshida, M., Jochems, A., Hasselmo, M.E. (2013) Comparison of properties of medial entorhinal cortex layer II neurons in two anatomical dimensions with and without cholinergic activation. *PLoS ONE* 8(9): e73904. PMCID: PMC3771974.

Gupta, K., Erdem, U.M., Hasselmo, M.E. (2013) Modeling of grid cell activity demonstrates in vivo entorhinal 'look-ahead' properties. *Neuroscience* 247: 395-411. PMCID: PMC3848600.

Jochems, A., Reboreda, A., Hasselmo, M.E., Yoshida, M. (2013) Cholinergic receptor activation supports persistent firing in layer III neurons in the medial entorhinal cortex. *Behav. Brain Res.* 254: 108-115. PMCID: PMC3773044.

Heys, J.G. and Hasselmo, M.E. (2012) Neuromodulation of Ih in layer II medial entorhinal cortex stellate cells: a voltage clamp study. *Journal of Neuroscience,* 32: 9066-9072. PMCID: PMC3462016

Shay, C.F., Boardman, I.S., James, N.M., Hasselmo, M.E. (2012) Voltage dependence of subthreshold resonance frequency in layer II of medial entorhinal cortex. *Hippocampus*, 22(8): 1733-49. PMCID: PMC3371298

Erdem, U.M., Hasselmo, M.E. (2012) A goal-directed spatial navigation model using forward trajectory planning based on grid cells. *Eur. J. Neurosci*. 35(6):916-931. PMCID: PMC3564559

Hasselmo, M.E., Brandon, M.P. (2012) A model combining oscillations and attractor dynamics for generation of grid cell firing. *Frontiers in Neural Circuits*, 6:30. PMCID: PMC3361022.

Gupta, K., Keller, L., Hasselmo, M.E. (2012) Reduced spiking in entorhinal cortex during the delay period of a cued spatial response task. *Learning and Memory*, 19(6): 219-230. PMCID: PMC3370375.

Newman, E.L., Shay, C.F., Hasselmo, M.E. (2012) Malignant synaptic growth and Alzheimer's disease. *Future Neurology* 7: 557-571. PMCID: PMC3571723

Heys, J.G., Schultheiss, N.W., Shay, C.F., Tsuno, Y., Hasselmo, M.E. (2012) Effects of acetylcholine on neuronal properties in entorhinal cortex. Front. Behav. Neurosci. 6:32. PMCID: PMC3402879

Raudies, F., Hasselmo, M.E. (2012) Modeling boundary vector cell firing given optic flow as a cue. *PLoS Computational Biology*, 8(6):e1002553. PMCID: PMC3386186.

Barry, C., Heys, J.G., Hasselmo, M.E. (2012) Possible role of acetylcholine in regulating spatial novelty effects on theta rhythm and grid cells. *Frontiers in Neural Circuits*, 6:5.. DOI: 10.3389. PMCID: PMC3282552.

Raudies, F., Mingolla, E., Hasselmo, M.E. (2012) Modeling the influence of optic flow on grid cell firing in the absence of other cues. *Journal of Computational Neuroscience*, 33: 475-493. PMCID: PMC3484285

Cutsuridis V, Hasselmo M. (2012) GABAergic contributions to gating, timing, and phase precession of hippocampal neuronal activity during theta oscillations. Hippocampus. 22(7):1597-621. PMID: 22252986.

Newman E.L., Gupta K, Climer J.R., Monaghan C.K., Hasselmo M.E. (2012) Cholinergic modulation of cognitive processing: insights drawn from computational models. Front Behav Neurosci. 6:24. PMCID: PMC3374475

Brandon, M.P., Bogaard, A.R., Libby, C.P., Connerney, M.A., Gupta, K., Hasselmo, M.E. (2011) Reduction of theta rhythm dissociates grid cell spatial periodicity from directional tuning. *Science*, 332: 595-599. PMCID: PMC3252766

Hasselmo, M.E., Sarter, M. (2011) Modes and models of forebrain cholinergic neuromodulation of cognition. *Neuropsychopharmacology,*36, 52-73. PMCID: PMC2992803

Brandon, M.P., Bogaard, A.R., Andrews, C., Hasselmo, M.E. (2011) Head direction cells in the postsubiculum do not show replay of prior waking sequences during sleep. *Hippocampus,* 22(3):604-18. PMCID: PMC3288437

Yoshida, M., Giocomo, L.M., Boardman, I., Hasselmo, M.E. (2011) Frequency of subthreshold oscillations at different membrane potential voltages in neurons at different anatomical positions on the dorso-ventral axis in the rat medial entorhinal cortex. *J. Neurosci*. 31(35):12683-94. PMCID: PMC3177240

Navratilova, Z., Giocomo, L.M., Fellous, J.M., Hasselmo, M.E., McNaughton, B.L. (2012) Phase precession and variable spatial scaling in a periodic attractor map model of medial entorhinal grid cells with realistic after-spike dynamics. *Hippocampus*, 22: 772-789.

Hyman, J.M., Hasselmo, M.E., Seamans, J.K. (2011) What is the functional relevance of prefrontal cortex entrainment to hippocampal theta rhythms? *Frontiers in Neuroscience* 5: 24. PMCID: PMC3052540.

Hasselmo, M.E., Giocomo. L.M., Brandon, M.P., Yoshida, M. (2010) Cellular dynamical mechanisms for encoding the time and place of events along spatiotemporal trajectories in episodic memory. *Behav. Brain Res*. 215: 261-274. PMCID: PMC2891577.

Heys, J.G., Giocomo, L.M., Hasselmo, M.E. (2010) Cholinergic modulation of the resonance properties of stellate cells in layer II of medial entorhinal cortex. *J. Neurophysiol*. 104(1): 258-70. PMCID: PMC2904208.

Zilli, E.A., Hasselmo, M.E. (2010) Coupled noisy spiking neurons as velocity-controlled oscillators in a model of grid cell spatial firing. *J. Neurosci.* 30: 13850-13860. PMCID: PMC2978507

Brown, T.H., Ross, B., Keller, J., Hasselmo, M.E., Stern, C.E. (2010) Which way was I going? Contextual retrieval supports the disambiguation of well-learned overlapping navigational routes. *J. Neurosci*. 30(21): 7414-22. PMCID: PMC2905880.

Hyman, J.M., Zilli, E.A., Paley, A.M., Hasselmo, M.E. (2010) Working memory performance correlates with prefrontal-hippocampal theta interactions but not with prefrontal neuron firing rates. *Front. Integr. Neurosci*. 4:2. PMCID: PMC2861479

Yoshida M., Hasselmo M.E. (2009) Persistent firing supported by an intrinsic cellular mechanism in a component of the head direction system. *J Neurosci*. 29(15):4945-52. PMCID: PMC2704018

Giocomo L.M., Hasselmo M.E. (2009) Knock-out of HCN1 subunit flattens dorsal-ventral frequency gradient of medial entorhinal neurons in adult mice. *J Neurosci.* 29(23):7625-30. PMCID: 2729850

Hasselmo M.E. (2009) A model of episodic memory: Mental time travel along encoded trajectories using grid cells. *Neurobiol Learn Mem*. 92(4):559-73. PMCID: PMC2825051

Hasselmo M.E., Brandon M.P., Yoshida M., Giocomo L.M., Heys J.G., Fransen E., Newman E.L., Zilli E.A. (2009) A phase code for memory could arise from circuit mechanisms in entorhinal cortex. *Neural Netw.* 22(8):1129-38. PMCID: PMC2825042

Schon K., Quiroz Y.T., Hasselmo M.E., Stern C.E. (2009) Greater working memory load results in greater medial temporal activity at retrieval. *Cereb Cortex*. 19(11): 2561-71. PMCID: 2758675

Zilli E.A., Yoshida, M., Tahvildari, B., Giocomo, L.M., Hasselmo, M.E. (2009) Evaluation of the oscillatory interference model of grid cell firing through analysis and measured period variance of some biological oscillators. PLoS Comput Biol. 5(11): e1000573. PMCID: PMC2773844

Huang Y, Brandon MP, Griffin AL, Hasselmo ME, Eden UT. (2009) Decoding movement trajectories through a T-maze using point process filters applied to place field data from rat hippocampal region CA1 Neural Comput. 21(12):3305-34

Brandon, M.P., Hasselmo, M.E. (2009) Sources of the spatial code within the hippocampus. F1000 Biol. Rep. 1.pii: 3. PMCID: PMC2920688.

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Hasselmo, M.E. (2008) Temporally structured replay of neural activity in a model of entorhinal cortex, hippocampus and postsubiculum. *Eur. J. Neurosci.* 28: 1301-1315. PMCID: PMC 2634752

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Hasselmo ME. (2008) Grid cell mechanisms and function: Contributions of entorhinal persistent spiking and phase resetting. *Hippocampus* 18(12): 1213-1229. PMCID: PMC 2614862

Yoshida, M., Fransen, E., Hasselmo, M.E. (2008) mGluR-dependent persistent firing in entorhinal cortex layer III neurons. *Eur. J. Neurosci*. 28(6):1116-26. PMCID: PMC2584367.

Zilli, E.A., Hasselmo, M.E. (2008) Analyses of Markov decision process structure regarding the possible strategic use of interacting memory Systems. *Frontiers Comput Neurosci*. 2:6. PMCID: PMC2614592

Giocomo LM, Hasselmo ME. (2008) Computation by oscillations: Implications of experimental data for theoretical models of grid cells. *Hippocampus* 18(12): 1186-1199. PMCID: PMC 2653064

Hasselmo, M.E., Brandon, M.P. (2008) Linking cellular mechanisms to behaviour: Entorhinal persistent spiking and membrane potential oscillations may underlie path integration, grid cell firing and episodic memory. *Neural Plasticity*, 2008: 658323. PMCID: PMC2480478

Koene RA, Hasselmo ME. (2008b) Consequences of parameter differences in a model of short-term persistent spiking buffers provided by pyramidal cells in entorhinal cortex. *Brain Res.* 1202:54-67 PMCID: PMC2722951

Hasselmo, M.E. (2008) The scale of experience. *Science*. 321(5885):46-7. (Commentary) PMCID: PMC2590634

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Koene RA, Hasselmo ME. (2008) Reversed and forward buffering of behavioral spike sequences enables retrospective and prospective retrieval in hippocampal regions CA3 and CA1. *Neural Networks* 21:276-88. PMCID: PMC2408666

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Giocomo LM, Zilli EA, Fransen E, Hasselmo ME. (2007) Temporal frequency of subthreshold oscillations scales with entorhinal grid cell field spacing. *Science*. 315(5819):1719-1722. PMCID: PMC2950607

Hasselmo ME, Giocomo LM, Zilli EA (2007) Grid cell firing may arise from interference of theta frequency membrane potential oscillations in single neurons. *Hippocampus*, 17(12): 1252-1271. PMCID: PMC2408670

Hasselmo ME (2007) Arc length coding by interference of theta frequency oscillations may underlie context-dependent hippocampal unit data and episodic memory function. *Learn. Mem*. 14: 782-794. PMCID: PMC2080580

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Manns, J.R., Zilli, E.A., Ong, K.C., Hasselmo, M.E., Eichenbaum, H. (2007) Hippocampal CA1 spiking during encoding and retrieval: Relation to theta phase. *Neurobiol. Learn. Mem.*, 87(1):9-20.

Katz Y, Kath WL, Spruston N, Hasselmo ME. (2007) Coincidence detection of place and temporal context in a network model of spiking hippocampal neurons. *PLoS Comput Biol.* 3(12):e234. PMCID: PMC2134961

Giocomo LM, Hasselmo ME (2007) Neuromodulation by glutamate and acetylcholine can change circuit dynamics by regulating the relative influence of afferent input and excitatory feedback. *Mol. Neurobiol*. 36(2): 184-200.

Siekmeier PJ, Hasselmo ME, Howard MW, Coyle J (2007) Modeling of context-dependent retrieval in hippocampal region CA1: Implications for cognitive function in schizophrenia. Schizophr Res 89:177-190.

Kremin T, Hasselmo ME. (2007) Cholinergic suppression of glutamatergic synaptic transmission in hippocampal region CA3 exhibits laminar selectivity: Implication for hippocampal network dynamics. *Neuroscience,* 149(4):760-7. PMCID: PMC2175389

Hasselmo, M.E., Stern, C.E. (2006) Mechanisms underlying working memory for novel information. *Trends in Cognitive Sciences,* 10(11):487-93. PMCID: PMC2253490

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INVITED LECTURES:
Neural Networks for Computing, Snowbird, UT -- April, 1992. "Acetylcholine, associative memory and Alzheimer's disease."
Children's Hospital, Harvard Medical School, Boston, MA (host: Kristin Harris) June 23, 1992 "Acetylcholine and memory: Neuropharmacology and computational modeling."
Workshop on Computational Neuroscience, Woods Hole, MA -- August 22-28, 1992. "Modeling of associative memory function in the piriform cortex."
Brandeis University -- Biology Department, Waltham, MA (host: John Lisman) Sept. , 1992 "Neuromodulation of cortical memory function: Computational modeling and brain slice physiology."
Brockton VA, Harvard Medical School, MA (host: Robert Green) January 22, 1993. "Acetylcholine and memory."
Mass. Mental Health Center Hobson Laboratory, Boston, MA (host: Cindi Rittenhouse) February 3, 1993. "Acetylcholine and memory"
Division of Applied Sciences, Harvard University, Cambridge, MA (host: Alan Yuille) March 12, 1993.
McLean Hospital, Mailman Research Center, Belmont, MA (host: Steve Matthyse) April 13, 1993. "Amyloid, acetylcholine and amnesia: A computational model of Alzheimer's disease."
Brown University, Providence, RI (host: Barry Connors) April 15, 1993. "Acetylcholine and cortical memory function."
Harvard Medical School Dept. Neurobiology, Boston, MA (host: Gary Blasdel) May 18, 1993. "Acetylcholine and cortical memory function: Brain slice physiology and computational modeling."
NY/NJ Learning and Memory Workshop, Rutgers Univ., Newark, N.J. (host: Mark Gluck) Oct. 1, 1993 "Acetylcholine and cortical memory function."
Massachusetts Institute of Technology, McDonnell-Pew Seminar Series, Cambridge, MA (host: David Somers) -- Oct. 7, 1993 "The fall of the static sigmoid function: Physiology and modeling of cortical neuromodulation."
Behavior and Decision Seminar, Harvard University, Cambridge, MA (host: Dick Herrnstein) -- Oct. 29 and Dec. 17, 1993 "The dynamics of learning in the hippocampus."
Boston University, Boston, MA (host: Dan Bullock, Steve Grossberg), Nov. 16, 1993 "Acetylcholine and the dynamics of learning in the neocortex and hippocampus."
Neural Information Processing Systems Workshop - What does the hippocampus compute? Dec. 3, 1993 "The septohippocampal system: Feedback regulation of cholinergic modulation."

Georgetown University - April 6, 1994 (hosts: Dan Alkon, Alan Faden) "Acetylcholine and cortical memory function."
Marine Biological Laboratories - Woods Hole, MA May 11, 1994 (host: Frank Grasso) "Neuromodulation and the olfactory cortex: Brain slice physiology and computational modeling"
Workshop on Processing in Neural Ensembles - Washington, D.C. - May 13, 1994 (organized by Dennis Glanzman, NIMH). "Feedback regulation of cholinergic modulation and hippocampal function."
Yale University - New Haven, CT October 14, 1994 (host: Ed Kairiss) "Acetylcholine and learning in the hippocampus."
Harvard Medical School, Beth-Israel Hospital, Behavioral Neuroscience Program - Feb. 22, 1995. "Acetylcholine and cortical memory function."
Swedish Conference on Connectionism, Skovde, Sweden, March 3, 1995. (host: Lars Niklasson) "Physiological constraints on models of behavior."
Long-Term Potentiation Conference, Marseilles, France, May 13, 1995 (host: Joel Davis) "Linking LTP to network function: A simulation of episodic memory function in the hippocampal formation."
Neural Models of Cognitive and Brain Disorders workshop, Univ. of Maryland, MD, June 8, 1995 (host: Eytan Ruppin) "A computational model of Alzheimer's disease as a breakdown in network dynamics."
Georgetown University, Institute of Cognitive and Computational Sciences, Washington, DC, July 20, 1995 (host: Alan Faden) "Neuromodulation and cortical function: Modeling the physiological basis of behavior."
World Conference on Neural Networks, Biological Neural Networks, Washington, DC, July 21, 1995 (host: Judith Dayhoff). "A network model of hippocampus combining self-organization and associative memory function."
Brandeis University, Hippocampus modeling workshop, Waltham, MA, Sept. 27, 1995 (host: John Lisman) "Computational modeling of hippocampal region CA3."
Carnegie-Mellon University, Center for the Neural Basis of Cognition, Pittsburgh, PA, Oct. 11, 1995 (host: Todd Braver) "Computational models of cortical neuromodulation: Linking cellular physiology to behavior."
Boston University, Department of Psychology, Boston, MA, Nov. 3, 1995 (host: Catherine Harris) "Neuromodulation and cortical function: Modeling the physiological basis of behavior.
Children's Hospital, Boston, MA, January 22, 1996 (host: Francis Jensen) "Modeling the role of the hippocampus in human memory function."
Columbia University, New York, NY, January 25, 1996 (host: Herb Terrace) "A biophysical simulation of hippocampal episodic memory function in rats and humans."
Rutgers University, Newark, NJ, January 26. 1996 (host: Mark Gluck) "A model of hippocampal episodic memory function."
Johns Hopkins University, Baltimore, MD, January 30. 1996 (host: Stew Hulce) "Acetylcholine and memory: Modeling the physiological basis of behavior."
Alzheimer Symposium, MIT, Cambridge, MA, Feb. 29, 1996 (host: Marc Paradis) "A model of the selective distribution of neuropathology in Alzheimer's disease."
Cognitive Neuroscience Conference, San Francisco, CA, Mar. 31, 1996 (host: Leslie Ungerleider) "A biophysical simulation of hippocampal episodic memory function."
Salk Institute, San Diego, CA, April 3, 1996 (host: Heather Anson-Dickinson, Fred Gage) "A biophysical simulation of hippocampal episodic memory function."
Spring Hippocampus Meeting, Grand Cayman Islands, B.W.I. April 23, 1996 (host: Bruce McNaughton) "Modeling the role of the hippocampus and neocortex in memory function."
Ben Gurion University of the Negev, Beer-Sheva, Israel, May 26, 1996 (host: Edi Barkai) "A model of human memory based on the cellular physiology of the hippocampus."
Workshop on Memory and Consolidation, Tel Aviv University, Tel-Aviv, Israel, May 28, 1996 (host: Eytan Ruppin) "A model of human memory based on the cellular physiology of the hippocampus."
McDonnell-Pew Workshop, Babson College, MA, June 7, 1996 (host: Steve Hanson) "Modeling cortical function: From biophysical realism to mathematical abstraction."
Hippocampal Computation and Memory Function, Rutgers, Newark, NJ, June 14, 1996 (host: Mark Gluck) "Modeling hippocampal episodic memory function: Role of cholinergic and GABAergic modulation."
Boston VA Memory Rounds, Boston VA, Boston, MA, Sept 6, 1996 (host: Laird Cermak) "A model of human memory based on the cellular physiology of the hippocampal formation."
MIT McDonnell-Pew Cognitive Neuroscience seminar series, Cambridge, MA, Sept 11, 1996 (hosts: Ann Graybiel/ Chris Moore) "Why are there multiple modulatory influences on cortical synaptic transmission?"
Brown University Dept. Psychology, Providence, RI, Sept 18, 1996 (host: Einar Siqueland) "A model of episodic memory function in the hippocampal formation."
McLean Hospital, Dept. Psychiatry, Belmont, MA, Jan. 10, 1997 (host: Francine Benes) "Neuromodulation and cortical function."
Winter Brain Conference, Utah, Jan. 29, 1997 (host: Jonathan Cohen) "Role of neuromodulation in cognition: Physiological and computational approaches."

University of Minnesota, Dept. Psychology, Minneapolis, MN, Feb. 24, 1997 (host: Dan Kersten) "Neuromodulation and cortical function: Modeling the physiological basis of behavior."
National Institute of Mental Health, Washington, DC, April 7, 1997 (hosts: Mortimer Mishkin and Tom Aigner) "Acetylcholine and memory."
Northeastern University, Boston, MA, April 8, 1997 (host: James Stellar) "Neuromodulation and cortical function: Modeling the physiological basis of behavior."
Brown University, Providence, RI, April 23, 1997 (host: John Donoghue) "Neuromodulation and cortical function: Modeling the physiological basis of behavior."
New York University, New York, NY, April 28, 1997 (host: Ursula Staubli) "Neuromodulation and cortical function: Modeling the physiological basis of behavior."
Institut Pasteur, Paris, France, June 10, 1997 (host: Richard Miles) "Computational modelling of the role of neuromodulators in cortical oscillatory dynamics."
Memorial University, St. John's Newfoundland, Canada, Oct. 11, 1997 (host: Carolyn Harley) "Neuromodulation and cortical function: Modeling the physiological basis of behavior."
Social Brain Workshop, Redondo Beach, CA, Oct. 25, 1997 (host: Bruce Miller) "Acetylcholine and regulation of neuronal firing."
Montreal Neurological Institute, Montreal, Canada, Nov. 11, 1997 (host: Angel Alonso) "Acetylcholine and memory: Modeling the physiological basis of behavior."
Univ. Massachusetts at Amherst, Dept. Psychology, Amherst, MA, Dec. 5, 1997 (host: Sandy Peterson) "Mechanisms of memory function."
Agora for Biosystems, Sigtuna, Sweden, hippocampal modeling workshop, Jan. 10, 1998 (host: Hans Liljenstrom) "A model of hippocampal episodic memory function."
Hippocampus club, Dept. Psychology, Harvard University, Cambridge, MA, Feb. 23, 1998 Overview of Hasselmo laboratory research.
Cognitive Neuroscience conference, San Francisco, CA, April 5, 1998 (symposium organizer: Bob Stickgold) "Neuromodulatory state changes in waking and sleep."
Harvard undergraduate neuroscience conference, Harvard Medical School, Boston, MA, April 25, 1998 (host: Matthew Miller) "Drugs and cognition."
Neuroscience research center, Washington, D.C. May 19, 1998 (host: Mark Happel) "Neuromodulatory state changes in waking and sleep."
Workshop on models of cognitive and behavioral disorders, Univ. Maryland, College Park MD, June 4, 1997 (host: Jim Reggia) "Memory function and dysfunction in a network simulation of the hippocampal formation."
Computational Neuroscience conference 1998 - Santa Barbara, CA (host: Jim Bower) Featured speaker: "Neuromodulation and cortical function."
Harvard undergraduate Mind, Brain and Behavior conference, Harvard Medical School, Boston, MA, March 13, 1999 (organizer: Alex Marson) "Neuromodulation and cortical function."
Meeting on the use of Aricept in the treatment of traumatic brain injury. May 19, 1999. (host: Glenn Mannheim, Assoc. Dir. Clin. Res. ESAI). "Cognitive effects of cholinergic deficits and relation to TBI." Pfizer-ESAI. ESAI Inc. Teaneck, NJ.
Cognitive and Neural Systems conference May, 1999 - Boston (host: Stephen Grossberg) "Neuromodulation and cortical memory function: physiology and computational modeling."
International Neural Networks Society conference - Washington, DC, July 14, 1999 (symposium organizer: Michael Denham) "Biophysical modeling of hippocampal episodic memory function and spatial navigation." Also, taught tutorial, served in panel discussion and chaired a session.
Functions of parahippocampal regions workshop - Venice, Italy, July 17, 1999 (organizer: Angel Alonso) "Computational modeling of subthreshold oscillations in entorhinal layer II stellate cells."
American Psychological Association conference - Boston, MA August 21, 1999 (symposium organizer: Michael Domjan) "Neuromodulation and cortical memory function."
Neuroscience retreat - Boston University, August 31, 1999 (host: Chris Li) "Neuromodulation: Acetylcholine and memory consolidation."
The parahippocampal region: Basic science and clinical implications. Baltimore, MD, Sept. 26, 1999 (host: Menno Witter) "Computational modeling of the entorhinal cortex."
Neural computation in science and technology. Jerusalem, Israel, Oct. 12, 1999 (organizer: David Horn). "Neuromodulation of functional state in hippocampus and entorhinal cortex."
Synaptic plasticity in addiction and other changes in behavior. Miami, FL, Oct. 23, 1999 (organizer: Susan Volman, NIDA) "Neuromodulatory regulation of memory consolidation."
Texas Tech Conference on Models of Alzheimer's Disease. Lubbock, TX, Nov. 12, 1999 (organizer Art Petrosian) "Consolidation, acetylcholine and Alzheimer's disease."

California Institute of Technology. Pasadena, CA, Jan. 31, 2000 (host: Bijan Pesaran, Richard Anderson). "What is the function of hippocampal theta rhythm?"
University of Texas at Houston. Houston, TX, March 16, 2000 (host: Jim Knierim, Terry Crow). "What is the function of hippocampal theta rhythm?"
AChems meeting, Sarasota, FL, April 28, 2000 (organizer: Donald Wilson). "Neuromodulation and the functional dynamics of the piriform cortex."
Johns Hopkins University, Baltimore MD. May 15, 2000 (host: Alfredo Kirkwood). "What is the function of hippocampal theta rhythm?"
Computational Models: Applications to Drug Abuse. NIDA, May 31, 2000. (host: Susan Volman).
Brandeis University, Waltham, MA, July 12, 2000. (host: Stephen Van Hooser). "What is the function of hippocampal theta rhythm?"
Dynamical Neuroscience, Soc. Neurosci. Satellite symposium, New Orleans, LA. Nov. 3-4, 2000. (organizer: Dennis Glanzman). "Dynamics of encoding and retrieval in the hippocampal formation."
Winter Conference on the Neurobiology of Learning and Memory, Park City, UT, Jan. 15, 2001, (organizer: Ray Kesner). "What is the function of hippocampal theta rhythm?"
University of Utah, Salt Lake City, Utah, Jan. 17, 2001 (host: Gene Wallenstein). "What is the function of hippocampal theta rhythm?"
Conference on Metalearning, neuromodulation and emotion, Keihanna Plaza Hotel, Seika, Kyoto, Japan, April 5-6, 2001 (host: Kenji Doya). "Acetylcholine and the encoding and consolidation of memory."
Conference on Learning: Natural and Artificial Neural Systems, Snowbird, Utah, April 10-12, 2001 (host: Yann LeCun) "Modeling the role of the hippocampus in goal-directed spatial navigation."
Conference on Multilevel Neuronal Modeling and Simulation, Edinburgh, Scotland, May 21-25, 2001 (host: Nigel Goddard and David Willshaw). "What is the function of hippocampal theta rhythm."
Conference on neurobiological modeling, Stockholm, Sweden, June 1-3, 2001 (hosts: Sten Grillner and Anders Lansner). "A proposed function for hippocampal theta rhythm: Neurophysiological data and computational modeling."
Rutgers University, Department of Psychology, Newark, NJ, September 20 (host: Howard Poizner). "What is the function of hippocampal theta rhythm."
Teaching Day, American College of NeuroPsychopharmacology (ACNP), Kona, Hawaii, (host: Joseph Coyle) Dec. 9, 2001. "Computational models of deficits of cognition and memory."
Brandeis University, Schizophrenia research workshop, Waltham, MA, (host: John Lisman). Jan. 8, 2002 "Perspectives on learning and recall states of the hippocampus."
University of Illinois at Champaign-Urbana, IL. Dept. of Psychology (hosts: Paul Gold and Neal Cohen). March 5, 2002. "What is the function of hippocampal theta rhythm?"
University of Montreal, 14th International Symposium on Acetylcholine in the cerebral cortex. Montreal, Canada, May 6-7, 2002. "Cholinergic regulation of the dynamics of encoding, retrieval and consolidation."
Edinburgh Summer School in Neuroinformatics, Institute for Adaptive and Neural Computation, University of Edinburgh, Edinburgh, Scotland, UK. (hosts: Fred Howell and Robert Cannon). Sept. 9-13, 2002. Tutorial on catacomb simulation package and talk on "An integrate-and-fire model of hippocampus."
Massachusetts Institute of Technology, Department of Brain and Cognitive Sciences (host: Matthew Wilson). September 27, 2002. "Modeling the role of the hippocampal formation in spatial navigation."
Peter Wallenberg Symposium, Stanford University, Palo Alto, CA, (hosts: Sten Grillner, Anders Lansner), October 25-26, 2002. "Mechanisms of memory function in the hippocampal formation: Physiological experiments and computational modeling."
Hippocampus Social, Society for Neuroscience Conference, Orlando, FL. (invited to host social by Dr. Robert Greene). Room 305B Orange County Conference Center. November 5, 2002. "What is the function of hippocampal theta rhythm." 10 minute introduction followed by chairing of discussion.
Boston University, N-group, Boston, MA, (host: Nancy Kopell and Steve Epstein). Dec. 5, 2002. "Computational modeling of hippocampal function."
Yale University, Neuroscience Program Seminar Series, New Haven, CT, (Host: Jed Meltzer). Jan. 14, 2003. "What is the function of hippocampal theta rhythm?"
Boston University, Center for Memory and Brain, (host: Howard Eichenabum). Feb. 24, 2003. "Theta theory: How episodic memory function may require hippocampal theta rhythm."
Carnegie-Mellon University, Center for the Neurobiological Basis of Cognition (CNBC), Pittsburgh, PA, (Host: Beata Jarosiewicz). March 20, 2003. "What is the function of hippocampal theta rhythm?"
Rutgers University, Workshop on Dopamine, Newark, NJ, (Host: Mark Gluck). March 28, 2003. "Dopaminergic modulation and goal directed activity in cortical structures."

Brandeis University, Conte Center Workshop on the NMDA hypothesis of schizophrenia. (Host: John Lisman). May 22, 2003. "Computational approaches to testing the NMDA receptor hypothesis."
International Joint Conference on Neural Networks 2003, Portland Oregon. Special session: Dynamical aspects of information encoding in neural networks. (Chairs: Robert Kozma, Ali Minai and DeLiang Wang). July 22, 2003. "Theta theory: Requirements for encoding events and task rules explain theta phase relationships in hippocampus and neocortex."
Computational Neuroscience course at Marine Biological Laboratories, Woods Hole, MA, (Organizers: John White and Bard Ermentrout). Aug. 19, 2003. "Models of encoding and retrieval dynamics in the hippocampus."
DARPA conference, Washington, DC, (Host: Mark Happel). Sept. 16, 2003. "Computational modeling of hippocampal memory function and spatial navigation."
Indiana University Department of Psychology Colloquium and Annual Meeting of the Pavlovian Society, Bloomington, IN, (Host: Brian O'Donnell and Olaf Sporns). Sept. 26, 2003. "The role of hippocampal theta rhythm in memory guided behavior."
Gatsby Institute Workshop on Acetylcholine and Norepinephrine, London, UK, (Hosts: Angela Yu and Peter Dayan). Feb. 9-11, 2004. "Cholinergic regulation of cortical function: Physiological and behavioral experiments and computational modeling."
SUNY Downstate (Brooklyn), Dept. Physiology and Pharmacology, Brooklyn, NY (Host: Andre Fenton). April 15, 2004. "The role of hippocampal theta rhythm in memory-guided behavior."
Notre Dame University, Series in Quantitative Methodologies, Notre Dame, IN (Host: Michael Wenger). May 27, 2004. "Modeling the role of acetylcholine and hippocampal theta rhythm in memory-guided behavior."
3rd Dutch Endo-Neuro-Psycho meeting, Parkhotel 'De Branding', Doorwerth, The Netherlands. June 1-4, 2004 (talk on June 3). (Hosts: Wim Riedel and Arjan Blokland). "Modeling the role of acetylcholine and hippocampal theta rhythm in memory-guided behavior."
Mount Sinai School of Medicine, Translational Neuroscience Seminar Series, NY, NY, (Host: Matthew Shapiro), June 23, 2004. "Hippocampal theta rhythm and the encoding and selective retrieval of episodes."
Cognitive Science Summer School, Cognitive Science Center Amsterdam, Holland (Host: Cyriel Pennartz). July 7, 2004. "Modeling the role of hippocampus and prefrontal cortex in memory-guided behavior."
Gatsby Institute, London, U.K. Workshop on: Theta Oscillations in the Brain: Neural Mechanisms and Functions. (Host: Neil Burgess and John O'Keefe). Sep. 5-8, 2004. "Neurophysiological data and modeling support a role of theta rhythm in the encoding and context-dependent retrieval of sequences."
RIKEN Institute, Japan, Workshop on the area of "Creating the Brain." Tokyo, Japan (Host: Shun-Ichi Amari and Michael Arbib). Sept. 28, 2004. "Using computational models to link physiological mechanisms to behavioral function."
CNS department, Boston University (Host: Michele Rucci). Oct. 8, 2004. "Physiological data and modeling support a role for theta rhythm in the encoding and context-dependent retrieval of sequences for memory-guided behavior."
University of Texas, San Antonio, TX (Host: Alberto Mares). Feb. 18, 2005. "Hippocampal theta rhythm and memory guided behavior."
NSF workshop on Collaborative Research in Computational Neuroscience (Host: Ken Whang, Susan Volman). April 22, 2005. "A spiking model of hippocampus for guiding behavior."
Harvard University (Host: Naomi Pierce). May 9, 2005. Mind, Brain and Behavior program. "Cortical mechanisms for memory guided behavior."
ICCNS conference, Boston University. May 20, 2005. "Modeling of prefrontal cortical mechanisms for decision making in behavioral tasks."
Computational Neuroscience meeting, CNS*2005, Madison, Wisconsin. July 17, 2005. First Plenary talk of conference. "Modeling the role of the prefrontal cortex and hippocampal formation in decision making and memory guided behavior."
Talk at International Joint Conference on Neural Networks, IJCNN*2005, Montreal, Quebec, Canada. Aug. 3, 2005. "Hebbian synaptic modification in cortical circuits and memory guided behavior in spatial alternation and delayed nonmatch to position."
NIH Neuroscience Seminar Series. (Host: Barry Horwitz). Oct. 24, 2005. "Mechanisms of memory-guided behavior in the prefrontal cortex, entorhinal cortex and hippocampus."
Computational Cognitive Neuroscience meeting. Nov. 11, 2005. Chair of session on "Interactions of prefrontal cortex and hippocampal formation involved in episodic and working memory."
Computational Cognitive Neuroscience meeting. Nov. 11, 2005. Presented talk:
"Remembering the new: Models guide experiments on working memory and episodic encoding of novel stimuli." Invited by Randy O'Reilly. Conference organizer: Dennis Glanzman.
Charles River Association for Memory (CRAM), Cambridge, MA. Jan. 18, 2006. Data blitz talk:
Cholinergic mechanisms in memory function. (On project with Karin Schon and Chantal Stern)
University of Texas at Dallas. (Host: Marco Atzori and Michael Kilgard) Feb. 3, 2006. "Neuromodulation and cortical function."
World Association of Modelers: Biologically Accurate Models Meeting. San Antonio, Texas. (Host: James Bower) March 25, 2006. "Modeling the neurophysiologial mechanisms of memory guided behavior."

Northwestern University, Chicago, IL. (Host: Nelson Spruston and Bill Kath) April 4, 2006. "Neurophysiological mechanisms of memory guided behavior."
McMaster University, Hamilton, Canada. (Host: Susannah Becker) April 27, 2006. "Cortical mechanisms for memory guided behavior."
Montreal Neurological Institute. (Host: Barbara Jones). May 3, 2006. "Acetylcholine and cortical function: Angel Alonso's Legacy."
Charite Universitatsmedizin, Berlin. (Host: Uwe Heinemann). May 9, 2006. "Acetylcholine and cortical memory function."
Symposium on Collaborative Research in Computational Neuroscience (CRCNS). (Organizer: Ken Whang) June 5, 2006. "A spiking model of hippocampus for guiding behavior."
Federation of European Neurosciences Society (FENS) invited symposium, Vienna, Austria. July 9, 2006. (Organizer: Stefan Leutgeb from Edvard Moser laboratory in Centre for the Biology of Memory, Trondheim, Norway). Title: "Hippocampal theta rhythm and the context dependent retrieval of episodes." Symposium title: "Cell assemblies and associative memory"
British Association for Psychopharmacology (BAP), Oxford, U.K. July 26, 2006. (Organizer: Wim Riedel, GlaxoSmithKline). "Modeling the role of acetylcholine and hippocampal theta rhythm in memory-guided behavior." Symposium on "Serotonin and memory: Neurocomputational modeling of memory consolidation in the hippocampal area."
Science of Learning Satellite Symposium, Atlanta, GA. (Organizer: Pat Kuhl) Oct. 13, 2006 "Learning and Episodic Memory: Encoding and Retrieval."
Brandeis University, Waltham, MA (Host: Paul Miller) Nov. 13, 2006. "Physiological mechanisms for memory-guided behavior."
Ruhr-University, Bochum, Germany (Host: Dr. Manahan-Vaughan) Feb. 5, 2007. "Physiological mechanisms for memory-guided behavior."
University of Chicago, Chicago, IL (Host: Phillip Ulinski, Leslie Kay) Mar. 6, 2007. "Mechanisms of memory-guided behavior in the hippocampus and associated cortical structures."
Brandeis University, Conte Center Retreat (Host: John Lisman) May 10-11, 2007. "Computational approaches for testing the NMDA hypothesis."
Symposium on Collaborative Research in Computational Neuroscience (CRCNS), University of Maryland at College Park, MD (Organizer: Cindy Moss and Ken Whang) June 4, 2007. "Entorhinal grid cells, membrane potential oscillations and persistent firing: Linking cellular properties, unit firing in behavioral tasks and episodic memory function."
Frije Universiteet, Amsterdam, course on In vivo phenotyping of mutant rodents: Integrating neural activity with rat behavior (host: Antonius Mulder). Sept. 10, 2007. "Oscillations, grid cells and memory-guided behavior."
Boston University Medical School Department of Pharmacology. (host: David Farb). Oct. 10, 2007. "Cortical mechanisms of episodic memory: Theta frequency oscillations and grid cells."
Brown University Department of Neuroscience, Providence, RI (host: Mayank Mehta). Oct. 25, 2007. "Cortical oscillations, grid cells and episodic memory."
International School on Neural Nets "E.R. Caianiello" 12th Course: Dynamic Brain. Ettore Majorana Centre for Scientific Studies, Dec. 5-12, 2007, Eric, Sicily, Italy. (host: Yoko Yamaguchi and Silvia Scarpetta). Two lectures: "Oscillations and grid cells." And "Mechanisms of memory-guided behavior."
Winter conference on Neural Plasticity, Feb. 14, 2008. St. Lucia. (organizer: Howard Eichenbaum). "Mechanisms for the episodic encoding of sequences: Oscillations, grid cells, arc length and splitter cells."
Winter conferece on Neural Plasticity, Feb. 15, 2008. St. Lucia. (organizer: Thomas H. Brown). "Persistent spiking in entorhinal cortical neurons."
COSYNE workshop on Spiking reinforcement learning. Snowbird, Utah. March 3, 2008 (organizer: Eugene Izhikevich). "Cortical mechanisms of memory guided behavior: Oscillations, grid cells, arc length and RL."
COSYNE workshop on Cortical replay. Snowbird, Utah. March 4, 2008 (organizer: Kamran Diba). "Cortical dynamics during waking and sleep regulated by cholinergic modulation of synaptic transmission and persistent spiking."
Eastern Psychological Association symposium on attention. Boston, MA. March 14, 2008 (organizer: Lou Matzel). "Acetylcholine and attention."
Gulbenkian Institute Neuroscience Course, Lisbon, Portugal. March 31, 2008 (host: Mate Lengyel). "In vitro studies of the hippocampus." And "Oscillations in the hippocampal formation and memory guided behavior."
Workshop on Dynamics of cortical-hippocampal interactions for memory-guided behavior. Part of International Conference on Cognitive and Neural Systems. Boston University. May 14, 2008 (organizer, Michael Hasselmo). "Oscillations, grid cells and episodic memory."
Svalbard conference on memory. Spitsbergen, Norway, June 3-8, 2008. (organizers: May-Britt Moser and Edvard Moser.) "Oscillations, grid cells and episodic memory."
Aquitaine conference on neuroscience. Bordeaux, France, Oct. 14-17, 2008 (organizers: George DiScala, Christophe Mulle, Robert Jaffard) "Mechanisms of episodic memory: Persistent spiking, theta rhythm oscillations and grid cells."

Seminars in Brain and Behavior. MIT Faculty Club, Nov. 6, 2008 (hosts: Ed Kravitz) "Oscillations, grid cells and episodic memory."
Center for the Neural Basis of Cognition, Carnegie-Mellon University and University of Pittsburgh. Dec. 10, 2008 (host: Carl Olson) "Oscillations, grid cells and episodic memory."
12th Annual Meeting of Hungarian Neuroscience Society, Hungarian Academy of Sciences, Budapest, Hungary. Jan. 23, 2009 (host: Jozsef Csicsvari, Tamas Freund) "Theta rhythm, grid cells and episodic memory."
New York University, Science focus day: When models and experiments meet. Helen and Martin Kimmel Center, Rm. 802, 60 Washington Square South, NY, March 23, 2009 (host: Wendy Suzuki) " Oscillations, grid cells and memory."
Columbia University Medical Center, Center for Theoretical Neuroscience, Neurotheory Seminar Series, April 10, 2009 (host: Joe Monaco) "Linking cellular mechanisms in entorhinal cortex to neural activity during behavior."
University of California at San Diego, May 5, 2009 (host: Brad Aimone) "Theta rhythm, grid cells and episodic memory."
University of New Mexico at Albuquerque, May 7, 2009 (host: Kevin Caldwell, Akaysha Tang) "Theta rhythm, grid cells and episodic memory."
Burke Rehabilitation Institute, July 14, 2009 (host: Pato Huerta) "Theta rhythm, grid cells and memory."
Norwegian Institute of Technology, Aug. 26, 2009 (host: Menno Witter) "Theta rhythm, grid cells and memory."
Barcelona Cognition, Brain and Technology Summer School, Univ. Pompeu Fabra, Barcelona, Sept. 11, 2009 (host: Paul Verschure) "Oscillations, grid cells and memory."
Stanford University, Oct. 1, 2009 (host: Jesse Rissman) "Oscillations, grid cells and memory."
Princeton University Workshop on Goal-directed behavior, Oct. 24, 2009 (host: Matthew Botvinick) "The role of grid cells in goal-directed spatial navigation."
University of Michigan, Nov. 10, 2009 (host: Martin Sarter) "Oscillations, grid cells and memory."
NSF Science of Learning Centers PI Meeting, Nov. 16, 2009 (host: Gary Cottrell) "Role of oscillations and grid cells in learning and memory."
University of Texas at Austin, Dec. 7, 2009 (host: Ila Fiete) "Oscillations, grid cells and memory."
Dartmouth University, March 5, 2010 (host: David Bucci and Jeff Taube) "Oscillations and grid cells in entorhinal cortex."
University of Pennsylvania, March 26, 2010 (host: Michael Kahana) "Oscillations, grid cells and memory."
Silvio O. Conte grant external advisory board visit, May 17, 2010 (host: Howard Eichenbaum) "Models of behavior and spike timing in sequence memory."
Workshop "To sleep, perchance to dream" at 14th International Conference on Cognitive and Neural Systems (ICCNS), May 19, 2010 (workshop organizer: Michael Hasselmo). "Modulation of grid cells and head direction cells during waking and sleep." Presented with Mark P. Brandon (graduate student).
ONR & AFOSR Bio-Inspired Autonomous Systems, Schafer Corp., Arlington, VA. May 20, 2010 (host: Thomas McKenna, ONR and Willard Larkin, AFOSR) "Autonomy and Bio-inspired navigation for micro-air vehicles based on hippocampal models."
Science of Learning Centers iSLC student and post-doctoral fellows conference, May 24, 2010 (host: Roxanne Harvey, Heather Ames) "Oscillations, grid cells and memory."
Computational Neuroscience, Vision and Acoustic Systems, June 9, 2010, Arlington, VA, June 9, 2010 (host: Thomas McKenna and Paul Bello, ONR) "Autonomy for micro air vehicles to support dismounted marines based on models of hippocampus and entorhinal cortex."
Grid cells: Formation and function, Gatsby Institute, 17 Queen Sq. London, June 30-July 2, 2010. (host: Neil Burgess, Caswell Barry). "Oscillations, persistent spiking and grid cells." (Talk with Mark P. Brandon on July 1, 11:30 am).
MRC Centre Recognition Memory Symposium, University of Bristol, Kingsdown Conference Centre, July 1-July 2, 2010. (Host: Malcolm Brown, E. Clea Warburton). "Cortical mechanisms of memory function." (on July 2, 11:30 am).
ONR Joint Cognitive Science/Human-Robot Interaction Program Review. MIT Dept. Brain Cogn. Sci. July 7-9, 2010 (Host: Tom McKenna). "Bio-inspired navigation for autonomous systems based on models of hippocampal place cells and entorhinal grid cells." (On July 7, 2010).
Organization for Computational Neuroscience conference, Sheraton Gunter Hotel, San Antonio TX, July 25-28, 2010. (Host: Jim Bower). "20 years of ocillations and memory: The long and winding road linking cellular mechanisms to behavior."
Grid cells and cognitive maps for autonomous systems. Office of Naval Research, Multi-disciplinary University Research Initivative (ONR-MURI) Kick-off meeting. Boston University, Boston, MA, Sept. 15, 2010. (Host: Michael Hasselmo). "Non-linear dynamic models of grid cells for navigation."
Role of Dopamine in LTP and Learning, Brandeis University, Waltham, MA, Oct. 3-Oct. 5, 2010 (Host: John Lisman and Emrah Duzel). "Role of cholinergic modulation in working memory."
Dynamical Neuroscience meeting, San Diego, CA. Nov. 11-12, 2010 (Host: Dennis Glanzman) "The role of oscillations and neuromodulation in different functional states."
Baylor College of Medicine, Houston, TX, Feb. 11, 2011 (Host: Ji Daoyun) "Oscillations, grid cells and memory."

Yale University, New Haven, CT, Department of Neuroscience, March 18, 2011 (Host: Babak Tahvildari) "Oscillations and grid cells."
Science of Autonomy Workshop, Office of Naval Research, Arlington Ballston Holiday Inn, April 5-6, 2011 (Host: Marc Steinberg) "Grid cells and the science of autonomy."
ONR and AFOSR Bio-inspired autonomous systems workshop, Arlington, VA, May 27, 2011 (Host: Tom McKenna). "Grid cells and the science of autonomy."
Computational Neuroscience, Vision and Audition workshop ONR, Arlingston, VA June 27-29, 2011 (Host: Tom McKenna). "MURI Bio-inspired navigation for autonomous ystems based on a model of hippocampal place cells and entorhinal grid cells."
Dynamic coding conference, Boston University, July 31, 2011 (Host: Frank Guenther). "Oscillations and grid cells in entorhinal cortex."
Yale University, New Haven, CT, Department of Psychology, September 30, 2011 (Host: Thomas Brown). "Grid cells and memory mechanisms in entorhinal cortex."
University of California, Los Angeles, CA, Joint Seminars in Neuroscience, October 4, 2011 (Host: Hugh T. "Tad" Blair). Oscillations and grid cells in entorhinal cortex."
Society for Neuroscience Mini-Symposium on Neural Phase Coding and Spike-Field Coherence, November 14, 2011 (Chairman: Zoltan Nadasdy). "Mechanisms for phase coding in entorhinal cortex grid cells."
Office of Naval Research Science of Autonomy Review (Host: Marc Steinberg). Dec. 6, 2011 "Autonomy for bio-inspired navigation for micro air vehicles based on hippocampal models. (presented with Prof. Nicholas Roy, MIT)
University of Southern California, Los Angeles, CA, January 10, 2012 (Host: Sarah Bottjer). "Oscillations and grid cells in entorhinal cortex."
University of California, San Diego, April 10, 2012 (Host: Laura DeNardo). "Oscillations and grid cells."
ONR MURI site visit. Singleton Auditorium, MIT, Cambridge, MA. April 24, 2012 (Host: Tom McKenna). "Grid cells and cognitive maps for autonomous systems."
ONR Bio-inspired autonomous systems workshop, Arlington, VA, May 25, 2012 (Host: Tom McKenna). "Autonomy for micro air vehicles to support dismounted marines."
Charles River Association for Memory, Boston, MA, May 30, 2012 (Host: Howard Eichenbaum). "Oscillations and cortical-hippocampal interactions involved in memory."
Fields Institute, Toronto, Ontario, Canada. May 31-June 1, 2012. (Host: Frances Skinner) Focus Program on "Towards Mathematical Modeling of Neurological Disease from Cellular Perspectives." Alzheimer's disease/ Pharmaceuticals Workshop. Fields Institute Rm. 230. "Physiological properties of entorhinal cortex and a model of Alzheimer's disease supporting treatment with NMDA receptor blockers and muscarinic M4 agonists."
AREADNE conference, Santorini, Greece, June 21, 2012. (Hosts: John Pezaris and Nicho Hatsopoulos). Talk title: "Oscillations, grid cells and the coding of spatial location."
ONR Computational Neuroscience meeting, Washington, D.C., June 27, 2012 (Host: Tom McKenna). "Grid cells and cognitive maps for autonomous systems."
Federation of European Neuroscience Societies (FENS), Barcelona, Spain, July 17. (Host: Prateep Beed). Symposium on "Medial entorhinal cortex: Dissecting the microcircuits." Talk title: Oscillations and grid cells."
Ruhr University, Bochum, Germany, Sept. 24, 2012 (Host: Torsten Neher, Institut fur Neuroinformatik) International Graduate School of Neuroscience (IGSN) symposium on "What is going on in the hippocampus? Computational approaches to memory formation and spatial information processing." Talk title: "Oscillations, grid cells and head direction cells."
Janelia Farms Conference on Neuron Types in the Hippocampal Formation, Auburn, VA, Nov. 11-14, 2012 (Host: Giorgio Ascoli, Thomas Klausberger, Massimo Scanziani, Peter Somogyi) Talk title: "Physiological properties of neurons in entorhinal cortex may underlie grid cell firing."
University of North Dakota, Dept. Pharmacology, Physiology and Therapeutics, Grand Forks, ND, Nov. 29-Dec. 1, 2012 (Host: Saobo Lei) Talk title: "Oscillations, grid cells and memory function in the entorhinal cortex."
University of Arizona, Dept. Psychology Cognition and Neural Systems seminar, Tucson, AZ, Feb. 18, 2013 (Host: Prof. Lynn Nadel) Talk Title: "Oscillations, grid cells and memory function in the entorhinal cortex."
Tel Aviv University, Sagol School of Neurosciences, Tel Aviv, Israel, March 10, 2013 (Host: Yuval Nir, Uri Ashery) Talk title: Oscillations, grid cells and entorhinal cortex memory function."
Bar Ilan University, Gonda Multidisciplinary Brain Research Center, Ramat-Gan, Israel, March 11, 2013 (Host: Moshe Bar) Talk title: Oscillations, grid cells and entorhinal cortex memory function."
Technion University, Science and Engineering of Neural Systems, Haifa, Israel, March 12, 2013 (Host: Dori Derdikman) Talk title: Oscillations, grid cells and entorhinal cortex memory function."
Mathematical Biosciences Institute, Ohio State University, Columbus, Ohio, March 18, 2013 (Organizers: Carmen Canavier, Todd Troyer, Bard Ermentrout) Talk title: "Oscillations and grid cells in entorhinal cortex."
MURI review, MIT Stata center, April 22, 2013 (Organizer: Michael Hasselmo, John Leonard). Talk title: "Grid cells and cognitive maps for autonomous systems."

Space in the brain: Cell, circuits, codes, cognition. Royal Society at Chicheley Hall, Kavli International Center, Buckinghamshire, U.K. May 1-3, 2013. (Organizers: Tom Hartley, Colin Lever, Neil Burgess and John O'Keefe) Talk title: "Grid cells, membrane potential resonance and theta cycle skipping in entorhinal cortex."
Hippocampus symposium, J.Z. Young Lecture Theater, Anatomy Building, Gower St., London, WC1E 6BT U.K. May 4, 2013. (Host: John O'Keefe). Talk title: "Grid cells and oscillations."
Computations in the brain and Translational Neuroscience 2013, Vytautas Magnus University, Kaunas, Lithuania, March 30, 2013. (Host: Ausra Saudargiene and Marja-Leena Linne) "Cortical dynamics of memory guided behavior: Experimental and modeling perspectives."
Okinawa Computational Neuroscience Course (Host: Erik DeSchutter), Okinawan Institute of Science and Technology, June 28-June 30, 2013. Talk Title "Memory mechanisms in the entorhinal cortex and hippocampus: Oscillations, grid cells and acetylcholine."
Neuroscience School of Advanced Studies, Convento Di Sant'Agostino, Cortona, Tuscany, Italy, July 25-28, 2013. (Host: Alcino Silva, Nicolas Bazan). Talk titles: "Role of oscillations in memory function." "Neuromodulation and cortical memory function."
Neural basis of spatial navigation: Experiments, Models, Theory. Session in Bernstein Conference on Computational Neuroscience. Tubingen, Germany. Sept. 24-25, 2013. (Host: Andreas Herz). Talk title: "Grid cells, resonance and theta cycle skipping."
Harvard Cognition Brain and Behavior Seminar series, Dept. Psychology, Harvard University. Oct. 17, 2013 (Host: Yaoda Xu). Talk Title: Grid cells, oscillations and memory mechanisms in entorhinal cortex."
Columbia University Medical Center. Columbia University. Oct. 24, 2013. (Host: Attila Losonczy). Talk title: "Grid cells and oscillations in entorhinal cortex."
University of California, Berkeley, Helen Wills Neuroscience Institute. Nov. 1, 2013 (Host: Michael Silver and Hillel Adesnik). "Grid cells and oscillatory dynamics for spatial coding in the entorhinal cortex."
Karles Invitational Conference, Naval Research Laboratories, Washington, DC. Jan. 13, 2014. (Host: Alan Schultz). Talk title: "Grid cells and cognitive maps for autonomous systems."
Kavli symposium on Neurophysics of Space, Time and Memory. Kavli Institute for Theoretical Physics, Santa Barbara. Fe 3-9, 2014. (Host: Mayank Mehta). Talk title: "Grid cells, waves and rebound spiking."
Georgia Regents University, Augusta, GA. April 2, 2014. (Host: Julietta Frey). Talk title: "Grid cells and oscillations in medial entorhinal cortex."
Bernstein Center for Computational Neuroscience, Humboldt University, Berlin, Germany. May 7, 2014. (Host: Richard Kempter). Talk Title: "Grid cells and neural dynamics in entorhinal cortex."
University of Basel Biocenter and Friedrich Miescher Institute, Basel, Switzerland. May 22, 2014 (Host: Rainer Friedrich). Talk Title: "Oscillations and spatial coding in entorhinal cortex."
ONR Computational Neuroscience, Arlington, VA, June 17, 2014 (Host: Tom McKenna). Talk title: "Grid cells and cogniti maps for autonomous systems."
Basque Workshop on Learning nad Memory Consolidation, San Sebastian, Spain, July 10-12, 2014 (Host: Nicolas Dumay and Doug Davidson), Talk Title: Acetylcholine and the cortical dynamics of encoding and consolidation."
Ruhr University, Bochum, Memory Course, Bochum, Germany, Sept. 10-12, 2014 (Host: Magdalena Sauvage). Talk titles: "Acetylcholine and memory function." "Grid cells and neural coding of space and time."
University of Wisconscin, Milwaukee, Dept. Psychology, Oct. 24, 2014 (Host: Kamran Diba). Talk title: "Grid cells in entorhinal cortex: Mechanisms and function."
University of California, Irvine, EpiCenter Symposium, Dept. Anatomy and Neurobiology, March 3, 2015 (Host: Ivan Soltesz). Talk Title: "Grid cells and neural dynamics in entorhinal cortex."
Stanford University, Center for Mind, Brain & Computation. Symposium on Computational Mechanisms of Learning and Memory. Huang Engineering Bldg. March 4, 2015 (Host: Anthony Wagner). Talk title: "Entorhinal cortex, acetylcholine an the coding of time and space for episodic memory."
University of British Columbia, Vancouver, Canada. Keynote address, Frontiers in Biophysics conference. David Mowafaghian Centre for Brain Health. March 14, 2015 (Host: Alan Manning). Talk title: Grid cells and the dynamics of entorhinal cortex.
Tufts University School of Medicine. Sackler Rm. 507, Wed. March 25, 2015. (Host: Dan Cox). Talk title: "Grid cells and neural dynamics in entorhinal cortex."
School of Pharmacy University College London. John Hanbury Lecture Theater 29-39 Brunswick Sq. April 10, 2015. (Host Mala Shah). Talk title: "Acetycholine and cortical function."

Satellite workshop on Spatial Computation from Neural Circuits to Robot Navigation. Informatics forum 10 Crichton St., Edinburgh. April 11, 2015. (Host: Matt Nolan). Talk title: "Potential sensory influences and functional roles of grid cells."
British Neuroscience Association meeting, Symposium on Cholinergic neuromodulation in the CNS: From single cells to networks. Edinburgh International conference Centre, 150 Morrison St., Edinburgh, UK. April 14, 2015. (Host: Mala Shah) Talk title: "Acetylcholine and the modulation of encoding and retrieval dynamics in cortical structures."
British Neuroscience Association meeting, Symposium on Memory consolidation. April 15, 2015. (Host: Michaela Dewar a Iris Oren, Sergio Della Salla). Talk title: "Acetylcholine and consolidation."
Satellite meeting on Links between memory interference and network dysfunction in amnesia. April 16, 2015. (Hosts: Michaela Dewar, Iris Oren). Talk title: "Acetylcholine in cortical circuits reduces interference."
Brigham and Women's Hospital Center for Brain/Mind Medicine Seminar Series. May 4, 2015. (Host: Scott McGinnis). Ta title: "Grid cells and memory mechanisms in entorhinal cortex."
ONR Computational Neuroscience Review, Arlington, VA, June 18-19, 2015 (Host: Tom McKenna) Talk title: MURI" Gr cells and cognitive maps for autonomous systems."
Sept. 19, 2015 – Kavli sponsored workshop on Cortical Computation. (Hosts: Gary Marcus, Adam Marblestone, Tomaso Poggio). "Neurophysiology and cognitive modeling."
University of Pennsylvania, Mahoney Institute for Neurosciences, 43rd Annual Louis B. Flexner Lecture, Oct. 28, 2015 (Ho Vijay Balasubramanian). Talk title: "Neural coding of space and time in entorhinal cortex."
Boston University Center for Information and Systems Engineering, Oct. 30, 2015 (Host: Ioannis Paschalidis). Talk title: Neural coding of space and time in the cortex."
Janelia Farms, Hippocampal-Entorhinal Complexities: Maps, Cell Types and Mechanisms. Nov. 10, 2015 (Host: Nelson Spruston). Title: "Grid cells and coding of spacing and time in the entorhinal cortex."
Winter Conference on Learning and Memory, Park City, Utah (40th Anniversary). Session on Coordination of Memory Computations by Brain Oscillations. Jan. 9, 2016. (Host: Stephan Leutgeb). Title: "Oscillations and the encoding of space a time."
Pfizer Research Technology Center, Cambridge, MA. Jan. 15, 2016. (Host: Evan LeBois and Jeremy Edgerton). Title: Acetylcholine modulates encoding and retrieval dynamics in cortex."
Boston University Data Science Day, Photonics Center. Jan. 22, 2016 (Hosts: Prakash Ishwar and Dino Christenson). Title: "Coding of space and time by neurons in the entorhinal cortex of behaving rodents."
Ruhr University, Bochum, Germany. Feb. 4, 2016 (Hosts: Birte Dietz, Markus Lorkowski) International Graduate School o Neuroscience. Symposium on Road to Cognition: From sensory integration to pathway information. Title: "Neural coding o space and time in entorhinal cortex."
California Institute of Technology, CNS program, Pasadena, CA. Feb. 22, 2016 (Host: Thanos Siapas) Title: "Neural coding of space and time in entorhinal cortex."
Kalamazoo College, Kalamazoo, MI. March 2, 2016 (Host: Peter Erdi) Title: "GPS in the brain."
Champalimaud Institute, Lisbon, Portugal. April 21, 2016 (Host: Andreia Cruz) Title: "Coding of space and time in the entorhinal cortex."
International Behavioral Neuroscience Society meeting, Hotel Kempinski, Budapest, Hungary. June 10, 2016 (Host: Colin Lever) Title: "Neural coding of space and time in entorhinal cortex."
Durham University, Department of Psychology workshop, Durham, United Kingdom. June 13, 2016 (Host: Colin Lever) Ti "Neural coding of space and time in entorhinal cortex."
UCL-French Embassy Collaborative Science and Technology Workshop, (Host: Tom Wills) H.O. Schild Lecture Theatre, University College London, London, U.K., June 13-14, 2016. Title: "Neural coding of space and time in entorhinal cortex"
Medical Development Group Boston Forum, Regis College, Weston, MA, Sept. 14, 2016 (Host: Peter Madras). Title: "Memory for space and time."
Neurophotonics Faculty Spotlight, Photonics Bldg, Boston University, Sept. 28, 2016 (Host: Helen Fawcett, Tom Bifano). Title: "Using light for exploring memory for space and time."
University of Montreal, Montreal, Quebec, Canada, Oct. 3, 2016 (Host: Elvire Vaucher). Title: "Neural coding of space and time in entorhinal cortex."
McLean Hospital, Belmont, MA, Oct. 25, 2016 (Host: Elif Engin). Title: Neural coding of space and time in entorhinal cortex."
Neurophysiology-based biomarkers, Biogen, Cambridge, MA, Nov. 1, 2016 (Host: Mihaly Hajos). Title: "Modeling cortica dynamics that may underlie hippocampal hyperactivation in Alzheimer's disease."

iSCAN, 1st DZNE Interdisciplinary Symposium on Spatial Cognition in Aging and Neurodegeneration, Magdeburg, Germa
Nov. 30, 2016. (Host: Thomas Wolbers). Title: “Neuromodulation and memory mechanisms in entorhinal cortex.”
Symposia on Memory, Centre de Recerca Matematica, Institut d’Estudis Catalans, Prat de la Riba, Barcelona, March 6-10,
2017 (Host: Alex Roxin, Sandro Romero, Nicolas Brunel) Title: “Neural coding of space and time in entorhinal cortex.”
Brandeis University, Computational Neuroscience series, March 20, 2017 (Host: John Lisaman) “Modeling goal-directed
behavior based on grid cells.”
Southern New England Junior Science and Humanities Symposium, Friday, March 24, 2017, B.U. Photonics center, (Host:
Michael Dennehy) Title: “Brain mechanisms for episodic memory and goal-directed behavior.”
Research event: Panel on University-Wide Centers, Wed. March 29, 2017, B.U. Photonics Center 9th floor (Host: Gloria
Waters). Title: “Center for Systems Neuroscience.”
University of Stony Brook, Neuroscience seminar series, Friday, May 25, 2017, (Host: Giancarlo La Camera) Title:
“Entorhinal cortex coding of space and time.”
Yale University, Department of Psychiatry, Monday, June 5, 2017, (Host: George Dragoi) Title: Memory mechanisms in
entorhinal cortex: encoding of space and time.”
Office of Naval Research Computational Neuroscience Review, Schafer Corporation, Arlington, VA June 13-14, 2017, (talk
on June 14), (Host: ONR Program Officer Tom McKenna). Title: “Neural circuits underlying symbolic processing in primat
cortex and basal ganglia.”
FENS-SfN summer school on Chemical Neuromodulation: Neurobiological, Neurocomputational, Behavioural and Clinical
Aspects, Bertinoro University Centre, University Bologna, Bertinoro, Italy, . June 21, 2017 (Host: Trevor Robbins and Mart
Sarter) Title: “Neuromodulation and cortical function.”
Neurophotonics Boot Camp, Photonics Center, Rm. 901, July 10, 2017, (Host: Helen Fawcett), Title: “Introduction to
Neuroscience.”