

Past CNS Meetings

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Fall Semester 2008-2009

10 September 2008: Organizational Meeting

17 September 2008: D. Smith

- [Manns, Howard and Eichenbaum \(2008\)](#). Gradual Changes in Hippocampal Activity Support Remembering the Order of Events. *Neuron* 56, 530-540.

25 September 2008: D. Smith

- [Lapish, Durstewitz, Chandler and Seamans \(2008\)](#). Successful choice behavior is associated with distinct and coherent network states in anterior cingulate cortex. *PNAS*, 105(33), 11963-8.

2 October 2008: Mark Albert

- [Albert, M. V., Schnabel, A. and Field, D. J. \(2008\)](#). Innate Visual Learning Through Spontaneous Activity Patterns. *PLOS Computational Biology*, 4(8), 1-8.

9 October 2008: Christina Sill

- [Ji and Wilson \(2008\)](#). Coordinated memory replay in the visual cortex and hippocampus during sleep. *Nature Neuroscience*, 10(3), 100-7.

16 October 2008: David Field

- [Gross, C. G. \(2002\)](#). Genealogy of the Grandmother Cell. *Neuroscientist*, 8(1), 84-90.
- [Quiroga, Reddy, Kreiman, Koch](#) Invariant visual representation by single neurons in the human brain. *Nature*, 435, 1102-7.
- [Waydo, Kraskov, Quiroga, Fried, and Koch. \(2006\)](#). Sparse Representation in the Human Medial Temporal Lobe. *Journal of Neuroscience*, 26(40), 10232-4.

23 October 2008: Patrick Gill

- [Gill, Amin, Fremouw, Woolley and Theunissen](#). Functional Consequences of Synaptic Plasticity in Sensory Systems (draft manuscript).

30 October 2008: Thom Cleland

- [Cleland and Sethupathy \(2006\)](#). Non-topographical contrast enhancement in the olfactory bulb. *BMC Neurosci* 7:7.
- [Cleland, Johnson, Leon, Linster \(2007\)](#). Relational representation in the olfactory system. *PNAS* 104(6):1953-8.

These two modeling papers illustrate a theoretical model of the mechanisms underlying high-dimensional decorrelation of odor stimuli in the olfactory bulb. The first (2006) is the more important for journal club purposes.

6 November 2008: Mike Wojnowicz

- [Durstewitz, Kelc and Gunturkun \(1999\)](#). A Neurocomputational Theory of the Dopaminergic Modulation of Working Memory Functions. *J. Neuroscience*. 19(7):2807-22.

13 November 2008: Helene Porte

- [Louie and Wilson \(2006\)](#). Temporally Structured Replay of Awake Hippocampal Ensemble Activity during Rapid Eye Movement Sleep. *Neuron*. 29:145-156.

20 November 2008:

- [Summerfield, Hassabis and Maguire \(2008\)](#). Cortical midline involvement in autobiographical memory. *Neuroimage*. early e-pblication.

27 November 2008: Thanksgiving Break - NO MEETING

4 December 2008:

- [Hagmann, Cammoun, Gigandet, Meuli, Honey, Wedeen, Sporns \(2008\)](#). Mapping the Structural Core of Human Cerebral Cortex. *PLOS Biology*. 6(7):1479-93.

Spring Semester 2008-2009

21 January 2009: Organizational Meeting

28 January 2009: David Smith

- Memory, Interference and Brain Mechanisms of Retrieval. No readings this week.

4 February 2009: Greg Peters

- [M. E. Hasselmo \(2008\). Grid Cell Mechanisms and Function: Contributions of Entorhinal Persistent Spiking and Phase Resetting, Hippocampus 18:1213-1229.](#)

11 February 2009: Anuttama Sheela Mohan

- [Hasselmo and Eichenbaum \(2005\). Hippocampal mechanisms for the context-dependent retrieval of episodes. Neural Networks 18: 1172-1190](#)

18 February 2009: Mike Wojnowicz - POSTPONED DUE TO PSYCHOLOGY FACULTY MEETING.

- Reading TBA.

25 February 2009: SUPERSEDED BY PSYCHOLOGY FACULTY MEETING

- No meeting; no reading.

4 March 2009: Thom Cleland

- [Inoue and Strowbridge \(2008\). Transient activity induces a long-lasting increase in the excitability of olfactory bulb interneurons. J. Neurophysiology 99:187-199.](#) (Some background information available in [Pressler et al \(2007\)](#)).

11 March 2009: David Smith

- [Pastalkova, Itskov, Amarasingham and Buzsáki \(2008\). Internally Generated Cell Assembly Sequences in the Rat Hippocampus](#)

18 March 2009: TBA

- Reading PDF.

25 March 2009: Christine Charvet (visiting postdoc)

- Precocial and altricial birds evolved different developmental strategies to expand their telencephalon. No readings.

1 April 2009: TBA, There will be a room change for this meeting.

- Reading PDF.

8 April 2009: Christina Sill

- [Buzsaki, G. \(2005\). Theta Rhythm of Navigation: Link Between Path Integration and Landmark Navigation, Episodic and Semantic Memory.](#)

15 April 2009: Cancelled!

22 April 2009: Helene Porte

- [Montgomery, Betancur, and Buzsaki \(2009\). Behavior-Dependent Coordination of Multiple Theta Dipoles in the Hippocampus.](#)

29 April 2009: Mike Wojnowicz

- Reading PDF.

Fall Semester 2009-2010

1 September 2009: Organizational Meeting

- No readings.

8 September 2009: Mark Albert

- [Mechanisms Underlying Development of Visual Maps and Receptive Fields. \(2008\) Andrew D. Huberman, Marla B. Feller and Barbara Chapman.](#)

15 September 2009: Sasha DeVore

- [R. Metzger et al \(2006\). Effects of Reward and Behavioral Context on Neural Activity in the Primate Inferior Colliculus. J Neurosci 26\(28\).](#)
- [L. M. Kay and G. Laurent \(1999\). Odor- and context-dependent modulation of mitral cell activity in behaving rats. Nature Neurosci 2\(11\).](#)

22 September 2009: David Smith

- [S. E. Morrison¹ and C. D. Salzman \(2009\). The Convergence of Information about Rewarding and Aversive Stimuli in Single Neurons. J Neurosci 29\(37\):11471-11483.](#)

29 September 2009: Article Pot Luck

- Bring your favorite (or the most interesting) recent paper you've run across and share it with the group.

6 October 2009: Mike Wojnowicz

- [Ganguli, S., Bisley, J., Roitman, J., Shadlen, M., Goldberg, M. and Miller, K. \(2008\). One-Dimensional Dynamics of Attention and Decision Making in LIP. Neuron 58, 15-25.](#)

13 October 2009: Fall Break - No meeting.

- No readings.

20 October 2009: Society for Neuroscience Conference - No meeting.

- No readings.

27 October 2009: Ted Cornforth

- [Balu, R. Pressler, R. T. and Strowbridge, B. \(2007\). Multiple Modes of Synaptic Excitation of Olfactory Bulb Granule Cells, Journal of Neuroscience 27\(21\):5621-5632.](#)
- [Gao, Y. & Strowbridge, B. \(2009\). Long-term plasticity of excitatory inputs to granule cells in the rat olfactory bulb. Nature Neuroscience..](#)

3 November 2009: Anuttama Sheela Mohan

- [Brea, Kay, Kopel \(submitted\). Subthreshold oscillations and gamma rhythms in the olfactory bulb: a modeling study. Submitted to PNAS. Preprint used by permission.](#)

10 November 2009: Matt Law

- [Mamiya et al \(2009\). Brain Region-Specific Gene Expression Activation Required for Reconsolidation and Extinction of Contextual Fear Memory. J Neurosci 29\(2\):402- 413.](#)
- [Wang, S., de Oliveira Alvares, L. & Nader, K. \(2009\). Cellular and systems mechanisms of memory strength as a constraint on auditory fear reconsolidation. Nature Neuroscience \(12\)7.](#)

During the discussion, Patrick Gill brought up an additional related paper:

Today several people asked me to send out a 2005 paper (Fusi, Drew, Abbott 2005, Cascade models of synaptically stored memories_) showing why a variety of memory maintenance mechanisms with different timescales are better than having just one or two simple memory maintenance mechanisms. [Here it is.](#) There's also a followup paper showing why it didn't matter that they used synapses with binary weighting in the 2005 paper: Stefano Fusi & L F Abbott "Limits on the memory storage capacity of bounded synapses" Nat Neuro 10 (4) April 2007 p 485.

17 November 2009: SiWei Luo

- [Chapuis, J. et al \(2009\). The Way an Odor Is Experienced during Aversive Conditioning Determines the Extent of the Network Recruited during Retrieval: A Multisite Electrophysiological Study in Rats. J Neurosci 29\(33\):10287-10298.](#)

24 November 2009: Laura Manella

- [Veyrac, A. et al, \(2009\). Novelty Determines the Effects of Olfactory Enrichment on Memory and Neurogenesis Through Noradrenergic Mechanisms. Neuropsychopharmacology 34, 786-95.](#)
- [Morenoa, M. et al, \(2009\). Olfactory perceptual learning requires adult neurogenesis. PNAS 106\(42\), 17980-5.](#)

1 December 2009: Greg Peters

- [Harvey et al \(2009\). Intracellular dynamics of hippocampal place cells during virtual navigation. Nature 461:941-946.](#)

Spring Semester 2009-2010

For **Spring semester 2009-2010**, the Behavioral, Computational, and Systems Neuroscience (BCS) Journal Club will meet on **Tuesdays from 12:00 to 1:15 pm** in **Uris Hall 205**.

The overarching theme this semester is **Oscillations**. Adhering to this theme is not required, but recommended. Please interpret it broadly. Theories of gamma, beta, and theta oscillations in the nervous system are the centroid of intent, but alpha, sleep, circadian, etc. rhythms are also spot-on as are reasonably accessible dynamical systems topics from math and engineering.

To add yourself to the BCS-L mailing list, send a plain-text email to bcs-l-request@cornell.edu with the body of the message saying simply **join**. The subject line doesn't matter. Sending the message **leave** instead will unsubscribe you from the list. See [Cornell's Lyris HowTo page](#) for further details.

Please contact [Thomas Cleland](#) with any questions ([David Smith](#) is on walkabout this semester). [BCS meeting archive](#).

26 January 2010: Organizational Meeting

- No readings.

2 February 2010: Thomas Cleland

- [Fries, Nikolic, and Singer \(2007\)](#). The gamma cycle. *Trends in Neurosciences*.
- Optional/supplementary: [Dan and Poo \(2004\)](#). Spike Timing-Dependent Plasticity of Neural Circuits. Review in *Neuron*.

In discussion, Patrick brought up [Li et al \(2004\)](#), a paper from Mu-ming Poo's lab showing that those presynaptic neurons that spike early, and that consequently (via STDP) have their synaptic weights upon a postsynaptic neuron strengthened, are also themselves rendered more excitable. That is, by this mechanism STDP can "work on the presynaptic neuron" as well as on its output synapse. The net effect of this can be to durably group a set of early-firing neurons together into a fully synchronous ensemble evoking activity in that postsynaptic cell.

9 February 2010: Christina Sill

- [Hasselmo, Giocomo, and Yoshida \(2009\)](#). Cellular dynamical mechanisms for encoding the time and place of events along spatiotemporal trajectories in episodic memory. *Behavioral Brain Research*.

16 February 2010: Patrick Gill

- [Fusi, Drews, and Abbott \(2005\)](#). Cascade models of synaptically stored memories. *Neuron*.

23 February 2010: NO MEETING

- **No Meeting.** If you come, nobody will be there except for you.

2 March 2010: Helene Porte

- [Mahon, Vautrelle, et al \(2006\)](#). Distinct patterns of striatal medium spiny neuron activity during the natural sleep-wake cycle. *J. Neuroscience*.

9 March 2010: Sasha Devore

- [Schroeder et al. \(2008\)](#). Neuronal oscillations and visual amplification of speech. *Trends in Cognitive Sciences*.

In discussion, Guoshi brought up [this modeling paper](#) analyzing the property that visual input (lip reading) facilitates auditory input most effectively under moderate noise conditions.

16 March 2010: Thomas Cleland

- [Fries \(2005\)](#). A mechanism for cognitive dynamics: neuronal communication through neuronal coherence. *Trends in Cognitive Sciences*.
- [Schoffelen, Oostenveld, and Fries \(2005\)](#). Neuronal coherence as a mechanism of effective corticospinal interaction. *Science*.

23 March 2010: SPRING BREAK

- No meeting, because it's spring break. But to keep you in good form, take a look at [this paper](#) that Shane found. Contrary to what I presented at the beginning of the semester, these authors argue that extracellular fields per se CAN directly affect neuronal activity. If this effect is sufficiently true to matter, this would provide another mechanism by which neuronal populations can be coordinated (or, in some circumstances, an additional problem to be overcome in trying to coordinate them). Maybe we'll get a chance to talk about it later this semester.

30 March 2010: SiWei Luo

- [Kalenscher et al. \(2010\)](#). Reward-associated gamma oscillations in ventral striatum are regionally differentiated and modulate local firing activity. *Journal of Neurophysiology*.

6 April 2010: Guoshi Li

- [David et al \(2009\)](#). Specific entrainment of mitral cells during gamma oscillation in the rat olfactory bulb. *PLoS Computational Biology*.

13 April 2010: Anuttama Sheela Mohan

- [Breton-Provencher et al \(2009\)](#). Interneurons produced in adulthood are required for the normal functioning of the olfactory bulb network and for the execution of selected olfactory behaviors. *Journal of Neuroscience*.

20 April 2010: Shane Peace and Ben Johnson

- Results from planar-array multielectrode slice recordings of gamma oscillations in the mouse olfactory bulb.

27 April 2010: NO MEETING

- **No Meeting.** You may wonder where the rest of us are. We are not at journal club, because there is none today.

4 May 2010: Mike Wojnowicz

- [Rougier et al \(2005\)](#). Prefrontal cortex and flexible cognitive control: rules without symbols. *Proceedings of the National Academy of Sciences USA*.

NOTE: It's coming time to start thinking of next semester's overarching theme. One possibility is "**Synaptic plasticity**", a broad topic that could include molecular mechanisms as well as population-level patterns of perceptual learning, LTP as well as neuromodulator-regulated changes. As a BCS topic, of course, the intent would be to choose approaches relevant to behavioral, computational, and systems-level questions. The relevance/necessity of bidirectional regulation of plasticity would be a prime topic. Following up on synchrony-dependent timing properties of synaptic plasticity mechanisms would establish a common thread with this semester's theme. Another, somewhat related theme is a **neuroscience version of statistical learning**: anything from perceptual learning to Bayesian representations of coding to temporal difference learning to dopamine (Schultz model) to the underlying synaptic rules that give rise to relevant population level learning properties to optimality of the Bayesian brain. Thoughts? other ideas? [Send them to Thom](#) or bring them up at BCS.

Another idea: **Mechanisms of memory consolidation and reconsolidation** -- perhaps a more focused version of "synaptic plasticity" as above. These topics are much more well understood and diverse than they were even a few years ago, and they are leading to a number of exciting hypotheses about systems and behavioral integrative mechanisms. For example, see Nader & Einarsson (2010) *Ann NY Acad Sci* 1191:27-41, as well as Jonathan L.C. Lee's recent *Nature Neuroscience* paper (2008) and *Trends in Neurosciences* opinion (2010).

Fall Semester 2010-2011

For **Fall Semester 2010-2011**, the Behavioral, Computational, and Systems Neuroscience (BCS) Journal Club will meet on **Tuesdays from 11:45 to 1:00 pm** in **Uris Hall 205**.

The overarching theme this semester is **Systems of neuronal representation and learning**. Adhering to this theme is not required, but is strongly recommended. Please interpret it broadly. It is intended to include such diverse topics as: the systematic regulation of synaptic plasticity, Bayesian representations (including sensory representations as probability estimates), Bayesian and/or energetic optimality in neural encoding or transmission, perceptual learning, decision-making (including reward harvesting), temporal difference learning/dopamine (Schultz model), synaptic rules that give rise to systems-level learning properties.

31 August 2010: Organizational Meeting

- No readings. Please come prepared to choose a day to present from the many opportunities below.

7 September 2010: Thom Cleland

- The topic of the day is "structure learning." Thom will present the PLoS One computational paper below with reference to the Behavioral Brain Research review of the overall topic (also below). Please read at least one of the two (your choice).
- [Braun, Waldert, Aertsen, Wolpert, Mehring \(2010\)](#). Structure learning in a sensorimotor association task. *PLoS One* 5(1):e8973.
- [Braun, Mehring, Wolpert \(2010\)](#). Structure learning in action. *Behavioural Brain Research* 206:157-165.

14 September 2010: David Smith

- [Kuhl, B., Dudukovic, N., Kahn, I. & Wagner, A. \(2007\)](#). Decreased demands on cognitive control reveal the neural processing benefits of forgetting. *Nature Neuroscience* 10(7), 908-914.
- [Wimber, M., Rutschmann, R., Greenlee, M. and Bauml, K. \(2009\)](#). Retrieval from Episodic Memory: Neural Mechanisms of Interference Resolution. *J Cog Neurosci* 21(3) 538-549.

21 September 2010: Laura Darnieder

- [Ohms VR, Gill A, Van Heijninge CAA, Beckers GJL, ten Cate C \(2009\)](#). Zebra finches exhibit speaker-independent phonetic perception of human speech. *Proc. Royal Society B*.
- [Gauthier B, Shi R, Xu Y \(2007\)](#). Simulating the acquisition of lexical tones from continuous dynamic input. *J. Acoustical Society of America* 121 (5), May 2007.

28 September 2010: Michelle Tong

- "A well-written review with bias" -- just the thing...
- [Hickok G \(2009\)](#). Eight problems for the mirror neuron theory of action understanding in monkeys and humans. *Journal of Cognitive Neuroscience* 21(7):1229-1243. ([PubMed Central version](#))

5 October 2010: Matt Lewis

- [Nir Y, Tononi G \(2009\)](#) Dreaming and the brain: from phenomenology to neurophysiology. *Trends in Cognitive Sciences* 14(2):88-100.
- [Schredl M et al \(2009\)](#) Information processing during sleep: the effect of olfactory stimuli on dream content and dream emotions. *Journal of Sleep Research* 18:285-290.
- [OPTIONAL] [Issa EB, Wang X \(2008\)](#) Sensory responses during sleep in primate primary and secondary auditory cortex. *Journal of Neuroscience* 28(53):14467-14480.

12 October 2010: Anuttama Sheela Mohan

- [Pfister J-P, Dayan P, Lengyel M \(2010\)](#) Synapses with short-term plasticity are optimal estimators of presynaptic membrane potentials. *Nature Neuroscience* 13(10):1271-1275.

19 October 2010: Guoshi Li

- These papers concern unified models of synaptic plasticity, attempting to understand the underlying general rule(s) regulating synaptic weights and the diversity of conditions under which they may be altered.
- [Shouval HZ, Wang SS-H, Wittenberg GM \(2010\)](#) Spike timing dependent plasticity: a consequence of more fundamental learning rules *Frontiers in Computational Neuroscience* 4:19. [This is a review article]
- [Shouval HZ, Bear MF, Cooper LN \(2002\)](#) A unified model of NMDA receptor-dependent bidirectional synaptic plasticity. *Proceedings of the National Academy of Sciences USA* 99(16): 10831-10836.

26 October 2010: Sasha Devore

- [Jazayeri M, Movshon JA \(2006\)](#) Optimal representation of sensory information by neuronal populations. *Nature Neuroscience* 9(5):690-696 plus corrigendum.
- [Supplementary materials](#) for Jazayeri & Movshon (2006). Includes corrected equations as noted in corrigendum.

2 November 2010: Tanya Nauvel

- [Smith AC, Shah SA, Hudson AE, Purpura KP, Victor JD, Brown EN, Schiff ND \(2009\)](#). A Bayesian statistical analysis of behavioral facilitation associated with deep brain stimulation. *Journal of Neuroscience Methods* 183(2):267-276. [PMC Version](#).

9 November 2010: Adam Miller

- [Yin HH, Prasad Mulcare S, Hilario MRF, Clouse E, Holloway T, Davis MI, Hansson AC, Lovinger DM, Costa RM \(2009\)](#). Dynamic reorganization of striatal circuits during the acquisition and consolidation of a skill. *Nature Neuroscience* 12(3):333-341.

16 November 2010: NO MEETING (Society for Neuroscience Annual Meeting)

23 November 2010: Shane Peace

- [Long MA, Jin DZ, Fee MS \(2010\)](#). Support for a synaptic chain model of neuronal sequence generation. *Nature* 468(7322): 394-399.

30 November 2010: SiWei Luo

- [Bromberg-Martin ES, Matsumoto M, Hikosaka O \(2010\)](#). Distinct tonic and phasic anticipatory activity in lateral habenula and dopamine neurons. *Neuron* 67: 144-155.
- [OPTIONAL - BACKGROUND] [Hikosaka O, Sesack SR, Lecourtier L, Shepard PD \(2008\)](#). Habenula: crossroad between the basal ganglia and the limbic system. *Journal of Neuroscience* 28(46): 11825-11829.

THEME PROPOSALS FOR SPRING 2011:

- Cell assemblies and functional connectivity.
- Attention.
- Decision making: how do brains/neurons make up their minds... could be broad like sensorimotor or small like anything dealing with synaptic integration/action potential generation.
- More oscillations. i know we did it last spring but it seems like it's still a recurring a nightmare for most people.

Spring Semester 2010-2011

For **Spring Semester 2010-2011**, the Behavioral, Computational, and Systems Neuroscience (BCS) Journal Club will meet on **Tuesdays from 11:45 to 1:00 pm** in **Uris Hall 205**.

Papers and notes from previous semesters can be found in the [BCS meeting archive](#).

The overarching theme this semester is **Cell assemblies, functional connectivity, and feedback**. Please interpret it broadly. It is intended to include such diverse topics as: cortical microcircuits, the dynamic reconfiguration of neural circuitry, decision making by such circuitry, the interactions between complex circuits and neuromodulatory nuclei (e.g., the basis for specificity in neuromodulatory effects), and the relationship between specific neuromodulators and nominal functions such as "attention" or "arousal".

To add yourself to the BCS-L mailing list, send a plain-text email to bcs-L-request@cornell.edu with the body of the message saying simply **join**. The subject line doesn't matter. Sending the message **leave** instead will unsubscribe you from the list. See [Cornell's Lyris HowTo page](#) for further details.

You can enroll in the BCS Journal Club for graduate or undergraduate credit (2 CR, S/U) as a *Topics in Biopsychology* seminar: PSYCH 6271-102. The course requires that you present at least once during the semester and participate actively overall.

Please contact [Thomas Cleland](#) or [David Smith](#) with any questions.

25 January 2011: Organizational Meeting

- No readings. Please come prepared to choose a day to present from the many opportunities below.

1 February 2011: Patrick Gill

- [Shoham S, O'Connor DH, Segev R \(2006\)](#). How silent is the brain: is there a "dark matter" problem in neuroscience? *Journal of Comparative Physiology A*.
- [Song S, Sjoestrom PJ, Reigl M, Nelson S, Chklovskii DB \(2005\)](#). Highly nonrandom features of synaptic connectivity in local cortical circuits. *PLoS Biology* 3(3):0507-0519 (e68).

8 February 2011: Dave Bulkin

- Optional Reading: [Bulkin and Groh, in press, Systematic Mapping of the Monkey Inferior Colliculus Reveals Enhanced Low Frequency Sound Representation.](#)

15 February 2011: TBD

- TBD

22 February 2011: TBD

- TBD

1 March 2011: Guoshi Li

- [Ardid S, Wang X-J, Gomez-Cabrero D, Compte A \(2010\).](#) Reconciling coherent oscillation with modulation of irregular spiking activity in selective attention: gamma-range synchronization between sensory and executive cortical areas. *J Neuroscience* 30(8):2856-2870.

This is a tough one folks, so be extra sure to read it ahead of time.

Followup papers and URL of potential interest:

- [Ardid S, Wang X-J, Compte A \(2007\).](#) An integrated microcircuit model of attentional processing in the neocortex. *J Neuroscience* 27(32):8486-8495. This is the data paper preceding the modeling paper we read for journal club today.
- A video lecture by Albert Compte can be found [here](#) (thanks Matt).
- [Froehlich F, McCormick DA \(2010\).](#) Endogenous electric fields may guide neocortical network activity. *Neuron* 67:129-143. This paper discusses the possibility that field potentials may directly influence neuronal activity/spike timing.
- [Anastassiou et al. \(2011\).](#) Ephaptic coupling of cortical neurons. *Nature Neuroscience*.
- [Anastassiou et al. \(2010\).](#) The effect of spatially inhomogeneous extracellular electric fields on neurons. *J Neurosci* 30(5):1925-1936. These two papers defend the concept of ephaptic interactions (incl field potentials) affecting neuronal activity.

8 March 2011: Licurgo de Almeida

- [David M. Eagleman and Terrence J. Sejnowski \(2007\).](#) Motion signals bias localization judgments: A unified explanation for the flash-lag, flash-drag, flash-jump, and Frohlich illusions. *Journal of Vision*. 7(4):3, 1-12.

15 March 2011: Matt Lewis

- [Zhang H, Lin S-C, Micolesis MAL \(2010\).](#) Spatiotemporal coupling between hippocampal acetylcholine release and theta oscillations *in vivo*. *J Neuroscience* 30(40): 13431-13440.
- [Zhang, Lin and Nicolelis \(2009\).](#) Acquiring local field potential information from amperometric neurochemical recordings. *J Neurosci Methods* 179: 191-200.

22 March 2011: SPRING BREAK -- NO MEETING

- If you come to BCS today, you will be mocked.

29 March 2011: Laura Darnieder

- [Gyorgy Buzsaki \(2010\).](#) Neural Syntax: Cell Assemblies, Synapsembles, and Readers. *Neuron*, 68:362-385.

5 April 2011: Michelle Tong

- [Richard Stevenson and Don Wilson \(2007\).](#) Odour perception: an object-recognition approach. *Perception* 36:1821-1833.
- [Orban G, Fiser J, Aslin RN, Lengyel M \(2008\).](#) Bayesian learning of visual chunks by human observers. *PNAS* 105(7):2745-2750. You may also want to read the [supplementary information](#).

12 April 2011: Tanya Nauvel

- [Corlett PR, Simons JS, Pigott JS, Gardner JM, Murray GK, Krystal JH, Fletcher PC \(2009\).](#) Illusions and delusions: relating experimentally-induced false memories to anomalous experiences and ideas. *Frontiers in Behavioral Neuroscience* 3(53):1-9.

19 April 2011: Anuttama Sheela Mohan

- [Tenenbaum JB, Griffiths TL \(2001\)](#) Generalization, similarity, and Bayesian inference. *Behavioral and Brain Sciences* 24:629-640.
- [Haddad R, Khan R, Takahashi YK, Mori K, Harel D, Sobel N \(2008\)](#) A metric for odorant comparison. *Nature Methods* 5(5): 425-429.

26 April 2011: Adam Miller

An interesting exploration of the functional connectivity between two memory systems.

- [Brown RM, Robertson EM \(2007\)](#) Off-line processing: reciprocal interactions between declarative and procedural memories. *Journal of Neuroscience* 27(39):10468-10475.
- [Keisler A, Shadmehr R \(2010\)](#) A shared resource between declarative memory and motor memory. *Journal of Neuroscience* 30(44):14817-14823.

3 May 2011: CANCELLED

Fall Semester 2011-2012

For **Fall Semester 2011-2012**, the Behavioral, Computational, and Systems Neuroscience (BCS) Journal Club will meet on **Tuesdays from 11:45 to 1:00 pm** in **Uris Hall 205**.

The overarching theme this semester is yet to be determined, but our likely first speaker will discuss his own recent work relating to neural representations. Please interpret BCS themes broadly -- they are meant to focus rather than to exclude.

Starting in Fall 2011, BCS will try out a "minimal Powerpoint" policy. In order to make discussions more engaging and less formal, we encourage presentations to be primarily "chalk talks", in which concepts are sketched rather than figures shown. Mixed media are OK too, in which a complex figure can be put onto a slide or simply zoomed up on from the PDF file of the original paper, but drawing the figure tends to convey stronger understanding than does flashing a figure up on the wall. We also emphasize that you do not have to present papers in their entirety, much less multiple papers. Having everybody read up thoroughly on something small and focused usually makes for a better experience than everybody skimming one or more full papers. You may want to present only one exciting concept, exemplified by one or more figures drawn from one or more papers. That's great. Focus on the concepts, and don't feel compelled to master every detail of every paper that you want to include in your presentation. Do what you feel is best, but please do not just put the figures of a paper into a slide show and describe the paper.

That said, presenting your own work is always welcome, and in this case often it will be in Powerpoint format and formally organized. Not a problem.

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30 August 2011: Organizational Meeting

- No readings. Please come prepared to choose a day to present from the many opportunities below.

6 September 2011: Raj Raizada

- Research talk: "*What makes different people's representations alike: A solution to the problem of across-subject fMRI decoding*"
- Here are the Powerpoint slides (https://confluence.cornell.edu/download/attachments/89461995/raj_Cornell_BCS_talk_Sept6.ppt?version=1&modificationDate=1315401718000) from Raj's talk.
- To see Raj's manuscript about the decoding-via-similarity-space work (mostly skipped over during his BCS talk, submitted to *J. Cognitive Neuroscience*), please [contact Raj](#) directly.

13 September 2011: Dave Bulkin

- Mark M. Churchland, John P. Cunningham, Matthew T. Kaufman, Stephen I. Ryu, and Krishna V. Shenoy (2010). Cortical Preparatory Activity: Representation of Movement or First Cog in a Dynamical Machine? *Neuron* 68, 387-400. (https://confluence.cornell.edu/download/attachments/89461995/churchland_2010.pdf?version=1&modificationDate=1315498595000)

20 September 2011: Eyal Nitzany

- No readings.

27 September 2011: Pedro Rittner

- Pedro will be talking about a computational model he is working on in deep olfactory bulb. Guoshi and Anuttama also have particular insights into the questions described.

4 October 2011: TBD

- TBD

11 October 2011: FALL BREAK - NO BCS

18 October 2011: Matt Lewis

- For background, please read: Dayan P, Huys QJM (2009) (<https://confluence.cornell.edu/download/attachments/89461995/Annu+Rev+Neurosci+2009+Dayan.pdf?version=1&modificationDate=1317307411000>) Serotonin in affective control. *Annual Review of Neuroscience* 32:95-126. This review attempts to combine the studies of serotonin (aka 5HT) in invertebrates with studies in vertebrates to construct a grand synthesis, and contains several ideas that are well worth discussing.

25 October 2011: Adam Miller

- Two papers in line with Adam's biannual theme. What does that mean? Come and ask Adam yourself.
- van der Meer MAA, Redish AD (2009) (https://confluence.cornell.edu/download/attachments/89461995/van+der+Meer_2009_Covert+expectation+of+reward+in+rat+ventral+striatum+at+decision+points.pdf?version=1&modificationDate=1318973143000) Covert expectation-of-reward in rat ventral striatum at decision points. *Frontiers in Integrative Neuroscience* 3(1).

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Please contact [Thomas Cleland](#) or [David Smith](#) with any questions.

24 January 2012: Organizational Meeting

- No readings. Please come prepared to choose a day to present from the many opportunities below.

31 January 2012: No meeting

- A week off, so that you can get that thing done that you wanted to get done but couldn't because you didn't have the time. Until now.

7 February 2012: Thom Cleland

- Three Ways to Break Your Olfactory Bulb's Memory Circuitry. Recent work on learning and memory within olfactory bulb -- in particular, the effects of muscarinic cholinergic antagonists, alpha-1 noradrenergic antagonists, isoflurane anesthesia, and potentially the fast glutamate reuptake transporter.

14 February 2012: Sasha Devore

- [Schroeder CE, Wilson DA, Radman T, Scharfman H, Lakatos P \(2010\)](#) Dynamics of Active Sensing and perceptual selection. *Current Opinion in Neurobiology* 20:172-176.

21 February 2012: Matt Law

- [Ferezou, Haiss, Gentet, Aronoff, Weber, Petersen \(2007\)](#) Spatiotemporal Dynamics of Cortical Sensorimotor Integration in Behaving Mice. *Neuron* 56:907-923.

28 February 2012: TBD

- Thom out of town

6 March 2012: TBD

- Thom out of town

13 March 2012: Licurgo de Almeida

- No readings. Licurgo will present some material from his recent work.

20 March 2012: SPRING BREAK - NO BCS MEETING

- n/a

27 March 2012: Dave Bulkin

- [Fries, P. \(2009\) Neuronal gamma-band synchronization as a fundamental process in cortical computation. Annual Review of Neuroscience. 32, 209-224.](#)

3 April 2012: Guoshi Li

- [Julie Chapuis and Don Wilson \(2011\)](#) Bidirectional plasticity of cortical pattern recognition and behavioral sensory acuity. *Nature Neuroscience*.
- [Supplementary information](#) from Chapuis and Wilson (2011).

10 April 2012: Greg Peters

- [Hyman JM, Ma L, Balaguer-Ballester E, Durstewitz D, Seamans JK \(2012\)](#) Contextual encoding by ensembles of medial prefrontal cortex neurons. *PNAS* 109(13): 5086-5091.

17 April 2012: SiWei Luo

- [Joseph LeDoux \(2012\). Rethinking the Emotional Brain. Neuron, 73, 653-676.](#)

24 April 2012: Adam Miller

- [Liu X, Ramirez S, Pang PT, Puryear CB, Govindarajan A, Deisseroth K, Tonegawa S \(2012\)](#) Optogenetic stimulation of a hippocampal engram activates fear memory recall. *Nature, in press*.

1 May 2012: CANCELED

Fall Semester 2012-2013

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Papers and notes from previous semesters can be found in the [BCS meeting archive](#) .

The semester's theme is **assessing and comparing methods of inference** regarding neural activity*. * How do local field potential (LFP) data relate to data from studies based on spike trains, BOLD, fMRI, calcium or voltage-dependent optical signals, immediate-early gene histology, or other measures of neural activity? What artifacts may arise from the use of particular techniques and do they threaten the supposed findings of a given paper? This has particular importance for relatively complex or new techniques -- e.g., studies of dynamical interregional communication in the brain, frequency-domain analyses, and other techniques that may be easily misinterpreted or overtrusted. As always, please interpret BCS themes broadly -- they are meant to focus rather than to exclude.

We are considering *decision making and 'neuroeconomics'* as a possible organizing theme for Spring 2013.

BCS will continue its "minimal Powerpoint" policy of Fall 2011. In order to make discussions more engaging and less formal, we encourage presentations to be primarily "chalk talks", in which concepts are sketched rather than figures shown. Mixed media are OK too, in which a complex figure can be put onto a slide or simply zoomed up on from the PDF file of the original paper, but drawing the figure tends to convey stronger understanding than does flashing a figure up on the wall. We also emphasize that you do not have to present papers in their entirety, much less multiple papers. Having everybody read up thoroughly on something small and focused usually makes for a better experience than everybody skimming one or more full papers. You may want to present only one exciting concept, exemplified by one or more figures drawn from one or more papers. That's great. Focus on the concepts, and don't feel compelled to master every detail of every paper that you want to include in your presentation. Do what you feel is best, but please do not just put the figures of a paper into a slide show and describe the paper.

That said, presenting your own work is always welcome, and in this case often it will be in Powerpoint format and formally organized. Not a problem.

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Please contact [Thomas Cleland](#) or [David Smith](#) with any questions.

4 September 2012: Organizational Meeting

- No readings. Please come prepared to choose a day to present from the many opportunities below.

11 September 2012: Dave Bulkin

- [Stimulus contrast modulates functional connectivity in visual cortex. Nauhaus I, Busse L, Carandini M, Ringach DL. Nat Neurosci. 2009.](#)
- [Network Rhythms Influence the Relationship between Spike-Triggered Local Field Potential and Functional Connectivity. Ray S, Maunsell JH. J Neurosci. 2011.](#)
- [Robustness of traveling waves in ongoing activity of visual cortex. Nauhaus I, Busse L, Ringach DL, Carandini M. J Neurosci. 2012.](#)

18 September 2012: No meeting this week. Use the found time for something important or fun!

25 September 2012: Adam Miller

- [Jason M. Scimeca and David Badre, 2012, Striatal Contributions to Declarative Memory Retrieval. Neuron.](#)
- [David J Foster and James J Knierim, 2012, Sequence learning and the role of the hippocampus in rodent navigation. Current Opinion in Neurobiology.](#)

2 October 2012: Sasha DeVore

- [Alexandre Zenon & Richard J. Krauzlis \(2012\). Attention deficits without cortical neuronal deficits. Nature, 489:434-9.](#)

9 October 2012: NEUROSCIENCE DAY

- Cornell's Neuroscience Program sponsors the annual Neuroscience Day events today.
- 9 am - 6 pm, in the Atrium/Morison Room of Corson-Mudd Hall

16 October 2012: SFN

- SFN Conference - no BCS meeting

23 October 2012: Matt Law

- [K. Allen, N. Rawlins, D. Bannerman and J. Csicsvari \(2012\). Hippocampal Place Cells Can Encode Multiple Trial-Dependent Features through Rate Remapping. J Neurosci, 32\(42\):14752-66.](#)

30 October 2012: Lindsey Vedder

- [Lee H, Ghim J-W, Kim H, Lee D, Jung MW \(2012\). Hippocampal neural correlates for values of experienced events. J. Neurosci. 32\(43\):15053-15065.](#)

6 November 2012: **SiWei Luo**

- [Okuno H \(2011\).](#) Regulation and function of immediate-early genes in the brain: beyond neuronal activity markers. *Neuroscience Research* 69: 175-186.
- [Katche C, Goldin A, Gonzalez C, Bekinschtein P, Medina JG \(2012\).](#) Maintenance of long-term memory storage is dependent on late posttraining Egr-1 expression.

- *Free Bonus Paper:* [Katche C, Bekinschtein P, Slipczuk L, Goldin A, Izquierdo IA, Cammarota M, Medina JH \(2009\)](#) \ Delayed wave of c-Fos expression in the dorsal hippocampus involved specifically in persistence of long-term memory storage. *Proc. Natl. Acad. Sci. USA* 107(1):349-354.

13 November 2012: **Rachel Swanson**

- [J. Fell and N. Axmacher \(2011\)](#) \ The role of phase synchronization in memory processes. *Nature Reviews*, 12:105-118.

20 November 2012: Guoshi Li

- Cancelled in favor of BEN job talk.

27 November 2012: Matt Lewis

- [Andrew A. Pierce and Allison W. Xu \(2010\)](#) \ De Novo Neurogenesis in Adult Hypothalamus as a Compensatory Mechanism to Regulate Energy Balance. *Journal of Neuroscience* 30(2):723--30.
- [Daniel A Lee, et al \(2012\)](#) \ Tanycytes of the hypothalamic median eminence form a diet-responsive neurogenic niche. *Nature Neuroscience* 15(5): 700-2.
- [Maia V. Kokoeva, Huali Yin, Jeffrey S. Flier \(2005\)](#) \ Neurogenesis in the Hypothalamus of Adult Mice: Potential Role in Energy Balance. *Science* 310:679-683.

Bonus content based on discussion:

- [Lee and Blackshaw 2012 review](#).
- [Kempermann Perspectives 2012 review](#).

More bonus content based on discussion -- the 2011 point/counterpoint articles in Neuron on the putative role of neurogenesis in pattern separation in olfactory bulb:

- [Aimone, Deng, Gage 2011 perspective](#).
- [Sahay, Wilson, Hen 2011 perspective](#).

Spring Semester 2012-2013

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The semester's theme is **Neural representations: are they? what are they? and how are they formed?** This can be approached from a mechanistic level (what neuronal mechanisms underlie the metric(s) by which neural representations are formed), a psychological level (generalization, discrimination, psychophysical evidence), a systems neuroscience level (coordinated cortical learning systems), or other levels TBD. Is the concept accurate? is it useful? misleading? Sensory inputs and learning change neural activity and mediate our experience - is this process well described by the concept of representations? As always, please interpret BCS themes broadly -- they are meant to focus rather than to exclude.

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22 January 2013: Organizational Meeting

- No readings. Please come prepared to choose a day to present from the many opportunities below.

29 January 2013 : [Lindsey Vedder](#)

- [Guifen Chena, John A. King, Neil Burgess and John O'Keefe \(2013\)](#). How vision and movement combine in the hippocampal place code. *PNAS* 110(1):378-83.

- [R. Jonathan Robitsek, John A. White, Howard Eichenbaum \(2013\)](#). Place cell activation predicts subsequent memory. *Behavioural Brain Research*. DOI 10.1016.

5 February 2013 (*Thom absent*) : TBD

- TBD

12 February 2013 : Dave Bulkin

- TBD

19 February 2013 (*Thom maybe absent*) : TBD

- TBD

26 February 2013 : Dave Bulkin and David Smith

- [Lesley A. Schimanski, Peter Lipa, and Carol A. Barnes \(2013\)](#). Tracking the Course of Hippocampal Representations during Learning: When Is the Map Required? *J Neurosci* 33(7):3094-3106.

5 March 2013 : Dave Bulkin and David Smith

- [Eduard Kelemen and Andre´ A. Fenton \(2010\)](#). Dynamic Grouping of Hippocampal Neural Activity During Cognitive Control of Two Spatial Frames. *PLOS Biology*, 8(6) 31000403.

12 March 2013 : Adam Miller

- [D. Tse, R. Langston, M. Kakeyama, I. Bethus, P. Spooner, E. Wood, M. Witter, R. G. M. Morris \(2007\)](#). Schemas and Memory Consolidation. *Science* 316:76-82.
- [D. Tse, T. Takeuchi, M. Kakeyama, Y. Kajii, H. Okuno, C. Tohyama, H. Bito, R. G. M. Morris \(2011\)](#). Schema-Dependent Gene Activation and Memory Encoding in Neocortex. *Science* 333:891-895.

19 March 2013 : SPRING BREAK

- No meeting

26 March 2013 (*Thom absent*) : Greg Peters

- [A. Garner, D. Rowland, S. Hwang, K. Baumgaertel, B. Roth, C. Kentros, and M. Mayford \(2012\)](#). Generation of a Synthetic Memory Trace. *Science* 335, 1513-6.

2 April 2013 : **Phil Perrone**

- [D. Salzman and S. Fusi \(2010\)](#). Emotion, Cognition, and Mental State Representation in Amygdala and Prefrontal Cortex. *Ann Rev Neurosci*.

9 April 2013 : Rachel Swanson

- [Bagdasarian et al \(2013\)](#). Pre-neuronal morphological processing of object location by individual whiskers. *Nature Neuroscience*, doi:10.1038/nn.3378.

16 April 2013 (*Thom maybe absent*) : Dave Bulkin and David Smith

- [Ziv, Burns, Cocker, Hameli, Kitch, Gamal and Schnitzer \(2013\)](#). Long-term dynamics of CA1 hippocampal place codes. *Nature Neuroscience*, 16 (3):264-8.

23 April 2013: Guoshi Li

- [Boergers, Epstein, Kopell \(2005\)](#). Background gamma rhythmicity and attention in cortical local circuits: a computational study. *PNAS* 102(19): 7002-7007. Background gamma rhythmicity and attention in cortical local circuits: A computational study

30 April 2013: SiWei Luo

- [Maffei, Haley, Fontanini \(2012\)](#). Neural processing of gustatory information in insular circuits. *Current Opinion in Neurobiology* 22:709-716. This review is background.
- [Samuelson. Gardner, Fontanini \(2013\)](#). Thalamic contribution to cortical processing of taste and expectation. *Journal of Neuroscience* 33(5): 1815-1827.

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The semester's theme is **Attention**, from both a neurobiological and cognitive perspective. The goal, of course, is to cross-reference and cross-challenge the two so as to come up with an integrative and useful understanding of the field. How can human attentional tasks best be studied using animal models? What, if any, is the special importance of cholinergic neuromodulation to attention? Is "attention" still a useful concept? As always, please interpret BCS themes broadly -- they are meant to focus rather than to exclude.

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3 September 2013: Organizational Meeting

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10 September 2013: Khenia Swallow (Introductory readings on attention)

- [Desimone and Duncan \(1995\)](#). [Neural mechanisms of selective visual attention](#). This review is still the canonical theoretical framework for visual attention in neuroscience. We are likely to refer back to it repeatedly over the course of the semester as we read and discuss other papers.
- [Chapter 1 from Harold Pashler's book The Psychology of Attention \(1998\)](#). A classic from the cognitive science perspective. Particularly notable is the author's position that the term "attention" is poorly defined and no longer useful.

17 September 2013: Dave Bulkin

- [Muzzio et al \(Kandel lab\) \(2009\)](#). Attention enhances the retrieval and stability of visuospatial and olfactory representations in the dorsal hippocampus.
- [Fenton et al \(2010\)](#). Attention-like modulation of hippocampus place cell discharge.

24 September 2013: Adam Miller

- [Gershman, Schapiro, Hubbach and Norman \(2013\)](#). Neural Context Reinstatement Predicts Memory Misattribution. *J. Neuroscience* 33(20):8590-5.
- [Eisenberg, Kobil, Berman and Dudai \(2003\)](#). Stability of Retrieved Memory: Inverse Correlation with Trace Dominance. *Science* 301:1102-4.

1 October 2013 (*Thom may be absent*): Lindsey Vedder

- [David A. Oakley and Peter W. Halligan \(2013\)](#). Hypnotic suggestion: opportunities for cognitive neuroscience. *Nature Neuroscience* 14:565-576.

8 October 2013: Pedro Rittner

- [Hasselmo and McGaughy \(2004\)](#). High acetylcholine levels set circuit dynamics for attention and encoding and low acetylcholine levels set dynamics for consolidation. *Progress in Brain Research* 145.
- [Hasselmo \(2006\)](#). The role of acetylcholine in learning and memory. *Current Opinion in Neurobiology* 16: 710-715.

15 October 2013: FALL BREAK

- No BCS meeting.

22 October 2013: Phil Perrone

- [Lickliter R, Bahrack LE, Markham RG \(2006\)](#). Intersensory redundancy educates selective attention in bobwhite quail embryos. *Developmental Science* 9:604-615.

29 October 2013: Guoshi Li

- [Ardid S, Wang X-J, Compte A \(2007\)](#). An integrated microcircuit model of attentional processing in the neocortex. *Journal of Neuroscience* 27 (32):8486-8495.

5 November 2013: Rachel Swanson

- [Mikiko Kadohisa, Philippe Petrov, Mark Stokes, Natasha Sigala, Mark Buckley, David Gaffan, Makoto Kusunoki and John Duncan \(2013\)](#). Dynamic Construction of a Coherent Attentional State in a Prefrontal Cell Population. *Neuron* 80:235-246.

12 November 2013: Society for Neuroscience Meeting

- No BCS meeting.

19 November 2013: NO MEETING

- No BCS meeting

26 November 2013: SiWei Luo

- [A.J. Austin and T. Duka \(2010\)](#). Mechanisms of attention for appetitive and aversive outcomes in Pavlovian conditioning. *Behavioral Brain Research* (213)19-26.
- [Felipe L. Schiffrino, Vivian Zhou and Peter C. Holland \(2013\)](#). Posterior parietal cortex is critical for the encoding, consolidation, and retrieval of a memory that guides attention for learning. *European Journal of Neuroscience*. doi:10.1111/ejn.12417

3 December 2013: Isle Bastille

- [Stephana C, Wilkinson A, Huber L \(2012\)](#). Have we met before? Pigeons recognise familiar human faces. *Avian biology research* 5(2):75-80.

Spring Semester 2013-2014

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28 January 2014: Organizational Meeting

- No readings. Please come prepared to choose a day to present from the many opportunities below.

4 February 2014: Group discussion of Charles Schroeder's work - no designated presenter.

- [J. Besle, C. Schevon, A. Mehta, P. Lakatos, R. Goodman, G. McKhann, R. Emerson and C. Schroeder \(2011\)](#). Tuning of the Human Neocortex to the Temporal Dynamics of Attended Events. *J. Neurosci* 31(9):3176-85.
- [P. Lakatos, G. Karmos, A. Mehta, I. Ulbert, C. Schroeder \(2008\)](#). Entrainment of Neuronal Oscillations as a Mechanism of Attentional Selection. *Science* 321:110-113.

11 February 2014: Dave Bulkin

- [Y. Saalmann, M. Pinsk, L. Wang, X. Li and S. Kastner \(2012\)](#). The Pulvinar Regulates Information Transmission Between Cortical Areas Based on Attention Demands. *Science* 337:753-6.

Additional references:

- Re Granger causality: [Bressler SL, Seth AK \(2011\)](#) Wiener-Granger causality: a well-established methodology. *NeuroImage* 58:323-329.
- Re the thalamus being more than a relay: [Sherman SM \(2007\)](#) The thalamus is more than just a relay. *Curr Opin Neurobiol* 17(4):417-422.
- Rachel's book: [Sherman SM, Guillery RW \(2013\)](#). Functional connections of cortical areas: a new view from the thalamus. MIT Press.

18 February 2014: FEBRUARY BREAK

- No meeting

25 February 2014: TBD

- TBD

4 March 2014: Phil Perrone

- [C. Asplund, J. Todd, A. Snyder and R. Marois \(2010\)](#). A central role for the lateral prefrontal cortex in goal-directed and stimulus-driven attention. *Nature Neuroscience*, 13(4):507-512.

11 March 2014: TBD

- Thom might be out of town

18 March 2014: David Smith

- [K. Miura, Z. Mainen and N. Uchida \(2012\)](#). Odor representations in olfactory cortex: distributed rate coding and decorrelated population activity. *Neuron* 74:1087-1098.

25 March 2014: Khenia Swallow

- [J. Arsenault, K. Nelissen, B. Jarraya and W. Vanduffel \(2013\)](#). Dopaminergic Reward Signals Selectively Decrease fMRI Activity in Primate Visual Cortex. *Neuron* 77:1174-1186.

1 April 2014: SPRING BREAK

- No meeting

8 April 2014: Lindsey Vedder

- [M. Schoenfeld, J. Hopf, C. Merkel, H. Heinze & S. Hillyard. \(2014\)](#). Object-based attention involves the sequential activation of feature-specific cortical modules. *Nature Neuroscience* 17(4): 619-626.

15 April 2014: Adam Miller

- [Harel A, Kravitz DJ, Baker OI \(2014\)](#). Task context impacts visual object processing differentially across the cortex. *PNAS*.

22 April 2014: Cory Horowitz

- [Paulk AC, Stacey JA, Pearson TWJ, Taylor GJ, Moore RJD, Srinivasan MV, van Swinderen B \(2014\)](#). Selective attention in the honeybee optic lobes precedes behavioral choices. *PNAS* 111(13):5006-5011.

29 April 2014:

- TBD

6 May 2014: Rachel Swanson

- [M. Chalk, J. Herrero, M. Gieselmann, L. Delicato, S. Gotthardt and A. Thiele \(2010\)](#). Attention Reduces Stimulus-Driven Gamma Frequency Oscillations and Spike Field Coherence in V1. *Neuron* 66, 114–125.

Fall Semester 2014-2015

For **Fall Semester 2014-2015**, the **Behavioral, Computational, and Systems Neuroscience** (BCS) Journal Club will be on hiatus. Watch this space for our reformation in Spring 2015.

Spring Semester 2014-2015

For **Spring Semester 2014-2015**, the **Behavioral, Computational, and Systems Neuroscience** (BCS) Journal Club will meet on **Tuesdays from 11:45 to 1:00 pm** in **Uris Hall 205**.

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The Spring 2015 semester's theme is **States and Sequences**, broadly intended to include the neurobiological, behavioral, and cognitive senses of the terms.

In order to make discussions more engaging and less formal, we encourage presentations to be primarily "chalk talks", in which concepts are sketched rather than figures shown. Mixed media are OK too, in which a complex figure can be put onto a slide or simply zoomed up on from the PDF file of the original paper, but drawing the figure tends to convey stronger understanding than does flashing a figure up on the wall. We also emphasize that you do not have to present papers in their entirety, much less multiple papers. Having everybody read up thoroughly on something small and focused usually makes for a better experience than everybody skimming one or more full papers. You may want to present only one exciting concept, exemplified by one or more figures drawn from one or more papers. That's great. Focus on the concepts, and don't feel compelled to master every detail of every paper that you want to include in your presentation. Do what you feel is best, but please do not just put the figures of a paper into a slide show and describe the paper.

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Please contact [Thomas Cleland](#) or [David Smith](#) with any questions.

27 January 2015: Organizational Meeting

3 February 2015: Dave Bulkin

- [Wikenheiser, Redish \(2015\)](#). Hippocampal theta sequences reflect current goals. *Nature Neuroscience* 18: 289–294

10 February 2015: David Smith

- [F. Do-Monte, K. Quinones-Laracuente & G. Quirk \(2015\)](#). A temporal shift in the circuits mediating retrieval of fear memory. *Nature*, epub doi: 10.1038/nature14030.
- [K. Smith, A. Virkuda, K. Deisseroth & A. Graybiel \(2013\)](#). Reversible online control of habitual behavior by optogenetic perturbation of medial prefrontal cortex. *PNAS* 109(46):18932-7.

17 February 2015: Feb Break - no BCS.

24 February 2015:

3 March 2015: No designated presenter, so please read the article and come prepared to discuss it.

- [M. deBettencourt, J. Cohen, R. Lee, K. Norman & N. Turk-Browne \(2015\)](#). Closed-loop training of attention with real-time brain imaging. *Nature Neuroscience* 18(3):470-8.

10 March 2015: Rachel Swanson

- [C. Harvey, P. Coen, & D. Tank \(2012\)](#). Choice-specific sequences in parietal cortex during a virtual-navigation [Wimberetal15.pdf](#) decision task. *Nature* 484: 62-68.
- Additional (optional) background reading: [Dean V. Buonomano and Wolfgang Maass \(2009\)](#). State-dependent computations: spatiotemporal processing in cortical networks. *Nature Reviews Neuroscience* 10:113-125.

17 March 2015: Thom Cleland

- [Mazor O, Laurent G \(2005\)](#). Transient dynamics versus fixed points in odor representations by locust antennal lobe projection neurons. *Neuron* 48:661-673.
- [Miller JP \(2005\)](#). A rose by any other code. Whatever that means. (This is a short *Neuron Previews* article about the Mazor & Laurent paper).

24 March 2015: Khenia Swallow

- [L. Hsieh, M. Gruber, L. Jenkins and C. Ranganath \(2014\)](#). Hippocampal Activity Patterns Carry Information About Objects in Temporal Context. *Neuron* 81, 1165-1178.

31 March 2015: Spring Break - no BCS

7 April 2015: Gina Mason

- [Robertson SS, Watamura SE, Wilbourn MP \(2012\)](#). Attentional dynamics of infant visual foraging. PNAS 109(28):11460-11464.

14 April 2015: No meeting

21 April 2015: David Smith

- [M. Wimber, A. Alink, I. Charest, N. Kriegeskorte & M. Anderson \(2015\)](#). Retrieval induces adaptive forgetting of competing memories via cortical pattern suppression. Nature Neuroscience, doi:10.1038/nn.3973.

28 April 2015: Ayon Borthakur

- [Riecke H \(2013\)](#). Olfactory computation and adult neurogenesis. *Encyclopedia of Computational Neuroscience*. Springer.
- [Chow S-F, Wick SD, Riecke H \(2012\)](#). Neurogenesis Drives Stimulus Decorrelation in a Model of the Olfactory Bulb. PLoS Computational Biology 8:3.

Read the encyclopedia article for an easier overview of how Hermann Riecke et al think about the issue and how their model is supposed to work; it will prepare you to better understand the model itself in the Chow et al paper. We won't go into all of the math, but will go through the figures and see how it works, what it predicts, etc..

- [Rowat P, Selverston AI \(1996\)](#). Figure 3 in this paper shows the simpler nullcline example that Thom was trying to illustrate on the board.

5 May 2015: Rachel Swanson

- [Luczak et al \(2009\)](#). Spontaneous events outline the realm of possible sensory responses in neocortical populations. Neuron 62: 413-425.

Fall Semester 2015-2016

25 August 2015: Organizational Meeting

- [Barron et al., 2015](#). Embracing multiple definitions of learning. *Trends in Neurosciences* 38(7):405.
 - This short TINS paper reflects on different views of learning derived from different fields of study (neuroscience, psychology, behavioral ecology, machine learning).

1 September 2015: *No meeting.*

8 September 2015: Adam Miller

- [J. Alfei, R. Monti, V. Molina, A. Bueno and G. Urcelay. \(2015\)](#). Prediction error and trace dominance determine the fate of fear memories after post-training manipulations. Learning and Memory 22:385-400.

15 September 2015: David Smith

- [Akers et al \(2014\)](#). Hippocampal Neurogenesis Regulates Forgetting During Adulthood and Infancy. Science, 344:598-602.

Optional reading: This review article has some background material on neurogenesis as it relates to the main paper.

- [P. Frankland, S. Kohler and S. Josselyn \(2014\)](#). Hippocampal neurogenesis and forgetting. Trends in Neurosciences. 36(9):497-503.

22 September 2015: David Smith

- Retrosplenial Cortical Neurons Encode Important Navigational Cues - recent data from the Smith lab, no readings.

29 September 2015: Marissa Rice

- [M. Guigueno, D. Snow, S. MacDougall-Shackleton, D. Sherry \(2014\)](#). Female cowbirds have more accurate spatial memory than males. Biology Letters 10.

6 October 2015: Norma Hernandez

- [J. de Bourbon-Teles, P. Bentley, S. Koshino, K. Shah, A. Dutta, P. Malhotra, T. Egner, M. Husain, and D. Soto \(2014\)](#). Thalamic Control of Human Attention Driven by Memory and Learning. Current Biology 24:993-9.

13 October 2015: *Fall Break - no BCS*

20 October 2015: Society for Neuroscience meeting - no BCS

27 October 2015: Marissa Rice

- [J. Vargas, J. Lopez, and C. Salas \(2004\)](#). Encoding of Geometric and Featural Spatial Information by Goldfish (*Carassius auratus*). *J. Comp. Psych.* 118(2):206-216.

10 November 2015: Khenia Swallow

- [G.E. Wimmer, E. Braun, N. Daw and D. Shohamy \(2014\)](#). Episodic Memory Encoding Interferes with Reward Learning and Decreases Striatal Prediction Errors. *J Neurosci*, 34(45):14901-12).

17 November 2015: Alex Ophir

- [S. Owen, S. Tuncdemir, P. Bader, N. Tirko, G. Fishell & R. Tsien \(2013\)](#). Oxytocin enhances hippocampal spike transmission by modulating fast-spiking interneurons. *Nature* 500:458-464.

24 November 2015: Lisa Hiura

- [H. Smid, G. Wang, T. Bukovinsky, J. Steidle, M. Bleeker, J. van Loon and L. Vet. \(2007\)](#). Species-specific acquisition and consolidation of long-term memory in parasitic wasps. *Proc R Soc B* 274:1539-46.

1 December 2015: Article Potluck

- *Bring your favorite (or most controversial) recent article for a 5-10 min presentation.*
-

Spring Semester 2015-2016

2 February 2016: Organizational Meeting

9 February 2016: Marissa Rice

- [U. Neisser \(1981\)](#). John Dean's Memory: A case study. *Cognition*, 9:1-22.
- [D. R. Addis, A. T. Wong, D. L. Schacter \(2007\)](#). Remembering the past and imagining the future: Common and distinct neural substrates during event construction and elaboration. *Neuropsychologia* 45:1363-1377.

16 February 2016: Feb Break - no meeting.

23 February 2016: Norma Hernandez

- [L. Savage, J. Hall, and R. Vetreno \(2011\)](#). Anterior thalamic lesions alter both hippocampal dependent behavior and hippocampal acetylcholine release in the rat. *Learning and Memory* 18:751-758.

1 March 2016: David gone - no meeting this week

- No meeting.

8 March 2016: David

- [R. Kaplan, M. Adhikari, R. Hindriks, D. Mantini, Y. Murayama, N. Logothetis, G. Deco \(2016\)](#). Hippocampal Sharp-Wave Ripples Influence Selective Activation of the Default Mode Network. *Current Biology* 26, 686-691.

Additional papers on ripples we talked about today:

- D. Foster & M. Wilson (2006). Reverse replay of behavioural sequences in hippocampal place cells during the awake state. *Nature* 440:680-683.
- K. Diba & G. Buzsaki (2007). Forward and reverse hippocampal place-cell sequences during ripples. *Nature Neuroscience* 10(10):1241-1242.
- S. Jadhav, C. Kemere, P. W. German, L. Frank (2012). Awake Hippocampal Sharp-Wave Ripples Support Spatial Memory. *Science* 336:1454-1458.

15 March 2016: Joseph

- [Cleland, T. A., Chen, S. Y. T., Hozer, K. W., Ukatu, H. N., Wong, K. J., & Zheng, F. \(2012\)](#). Sequential mechanisms underlying concentration invariance in biological olfaction. *Bioinspired solutions to the challenges of chemical sensing*, 7
- [Barrett, L. F., & Simmons, W. K. \(2015\)](#). Interoceptive predictions in the brain. *Nature Reviews Neuroscience*, 16(7), 419-429.

22 March 2016: Group Discussion (no official presenter)

- [E. Goldfarb, M. Chun, E. Phelps \(2016\)](#). Memory-Guided Attention: Independent Contributions of the Hippocampus and Striatum. *Neuron* 89:317-324.

29 March 2016: Spring Break - no meeting

5 April 2016: Marissa Rice/Group Discussion

- [C. Shawn Green¹ and Daphne Bavelier \(2015\)](#). Action video game training for cognitive enhancement. *Current Opinion in Behavioral Sciences* 4: 103-108.

Additional readings following discussions at the meeting:

- [Mnih V, Kavukcuoglu K, et al. \(2015\)](#). Human-level control through deep reinforcement learning. *Nature* 518:529.

12 April 2016: Open (Thom gone?)

- TBA

19 April 2016: Khena Swallow

- [L. Batterink, J. Creery, and K. Paller \(2016\)](#). Phase of Spontaneous Slow Oscillations during Sleep Influences Memory-Related Processing of Auditory Cues. *Journal of Neuroscience* 36(4):1401-9.

26 April 2016: Group Discussion (no official presenter)

- [D. Bendor & M. Wilson \(2012\)](#). Biasing the content of hippocampal replay during sleep. *Nature Neuroscience* 15(10):1439-44.
- [G. Lavilléon, M. Lacroix, L. Rondi-Reig & K. Benchenane \(2015\)](#). Explicit memory creation during sleep demonstrates a causal role of place cells in navigation. *Nature Neuroscience* 18(4):493-95.

3 May 2016: Joseph & all

- [Hu X, Antony JW, et al. \(2015\)](#) Unlearning implicit social biases during sleep. *Science* 348(6238):1013-1015.

10 May 2016: Article Potluck - bring your favorite (or most amazing, unbelievable, oddest, etc.) recent article (or data) to share with the group.

Fall Semester 2016-2017

The Fall 2016 semester's theme is "*Social Stimuli and Neural Representations*". This is intentionally broad because we want presenters to bring many different perspectives to the BCS journal club. Here are some examples of what we have in mind:

- How do social stimuli (e.g. conspecifics) influence neural representations (e.g. spatial-contextual representations in the hippocampus)?
- How are social stimuli, or stimuli that are related to social processes represented?
- How is information related to individual or species recognition represented in the brain?

Presenting your own work is always welcome, in whatever manner you like.

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Please contact [Thomas Cleland](#) or [David Smith](#) with any questions.

23 August 2016: Organizational Meeting

30 August 2016: David Smith and Alex Ophir

- [Tavares, R., Mendelsohn, A., Grossman, Y., Williams, C., Shapiro, M., Trope, Y., and Schiller, D. \(2015\)](#). A Map for Social Navigation in the Human Brain. *Neuron* 87:231-43.

6 September 2016: David Smith and Alex Ophir

- [G. Alexander, S. Farris, J. Pirone, C. Zheng, L. Colgin & S. Dudek \(2015\)](#). Social and novel contexts modify hippocampal CA2 representations of space. *Nature Communications*. DOI: 10.1038.

13 September 2016: Marissa Rice and Alex Ophir

- [F. Hitti & S. Siegelbaum. \(2014\)](#). The hippocampal CA2 region is essential for social memory. *Nature* 508:88-94.
- [A. Smith, S. Williams Avram, A. Cymerblit-Sabba, J. Song and W. Young \(2016\)](#). Targeted activation of the hippocampal CA2 area strongly enhances social memory. *Molecular Psychiatry* 21:1137-1144.

Additional (optional) reading:

- [L. Zynyuk, J. Huxter R. Muller and S. Fox. \(2012\)](#). The Presence of a Second Rat Has Only Subtle Effects on the Location-Specific Firing of Hippocampal Place Cells. *Hippocampus* 22:1405–1416.

20 September 2016: No meeting this week

- No readings

27 September 2016: David Smith and Alex Ophir (Retrosplenial Cortex as a possible target of investigation for social-spatial coding)

- [Immordino-Yang M, McColl A, Damasio H, Damasio A. \(2009\)](#). Neural correlates of admiration and compassion. *PNAS* 106(19):8021-6.

Additional background for those interested (we'll discuss these in class).

- [Vedder, L. C., Miller, A. M. P., Harrison, M. B., and Smith, D. M. \(2016\)](#). Retrosplenial Cortical Neurons Encode Navigational Cues, Trajectories and Reward Locations During Goal Directed Navigation. *Cerebral Cortex*, DOI 10.1093/cercor/bwh192.
- [Phelps SM & Ophir AG \(2009\)](#). Monogamous brains and alternative tactics: Neuronal V1aR, space use and sexual infidelity among male prairie voles. In *Cognitive ecology: The evolutionary ecology of information processing and decision making*. 2nd Ed. (eds: Dukas R. & Ratcliffe J.) Chicago: University of Chicago Press.

4 October 2016: David Smith and Alex Ophir (A primer on the dorsal and ventral hippocampus)

- [B. Poucet, C. Thinus-Blanc, and R. Muller \(1994\)](#). Place cells in the ventral hippocampus of rats. *Neuroreport* 5, 2045-2048.
- [M. Fanselow and H. Dong \(2010\)](#). Are the Dorsal and Ventral Hippocampus Functionally Distinct Structures? *Neuron* 65:7-19.
- [B. Strange, M. Witter, E. Lein and E. Moser \(2014\)](#). Functional organization of the hippocampal longitudinal axis. *Nature Reviews Neuroscience*, 15:655-669.

11 October 2016: Fall Break - no journal club

18 October 2016: David Smith and Alex Ophir (Ventral hippocampus as a possible target of investigation for social-spatial coding)

- [A. Felix-Ortiz and K. Tye \(2014\)](#). Amygdala Inputs to the Ventral Hippocampus Bidirectionally Modulate Social Behavior. *J. Neuroscience* 34(2): 586 –595.

Additional review as background for those interested.

- [S. Allsop, C. VanderWeele, R. Wichmann and K.Tye \(2014\)](#). Optogenetic insights on the relationship between anxiety-related behaviors and social deficits. *Frontiers in Behavioral Neuroscience*, vol 8, Article 241.

25 October 2016: David Smith and Alex Ophir (Ventral hippocampus as a possible target of investigation for social-spatial coding, continued)

- [T. Okuyama, T. Kitamura, D. Roy, S. Itohara and S. Tonegawa \(2016\)](#). Ventral CA1 neurons store social memory. *Science* 353(6307):1536-41.

1 November 2016: Jesse Werth

- Jesse will discuss the ideas in of his recently submitted NSF fellowship proposal.

Suggested background reading:

- [S. Shea, L. Katz and R. Mooney \(2008\)](#). Noradrenergic Induction of Odor-Specific Neural Habituation and Olfactory Memories. *Journal of Neuroscience* 28(42):10711–10719.

8 November 2016: Adam Miller

- Adam will discuss his recently completed work on the retrosplenial cortex, spatial memory and the simulation of future goals.

15 November 2016: SFN Meeting - no journal club

22 November 2016: Cancelled - no meeting this week.

29 November 2016: Article potluck

- Bring your favorite, oddest, or most compelling recent finding or article to share with the group.

Spring Semester 2016-2017

For **Fall and Spring Semesters 2016-2017**, the **Behavioral, Computational, and Systems Neuroscience (BCS)** Journal Club will meet on **Tuesdays from 11:45 to 1:00 pm** in **Uris Hall 205**.

Papers and notes from previous semesters can be found in the [BCS meeting archive](#).

The Spring 2017 semester's theme is "show us what you are interested in." As we morph into the "BEN journal club", we think that it may be less important to choose papers that will be close to every attendees heart than it is to choose papers that are blisteringly important or interesting or controversial in your own subfield, and explain/share this with the group. It's good for all of us. The corollary is that attendees don't decide whether to attend in a given week based on what is being presented.

Presenting your own work is always welcome, in whatever manner you like.

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Please contact [Thomas Cleland](#) or [David Smith](#) with any questions.

31 January 2017: Organizational Meeting

7 February 2017: No meeting.

14 February 2017: David Smith

- [P. Jacob, G. Casali, L. Spieser, H. Page, D. Overington & K. Jeffery \(2016\)](#). An independent, landmark-dominated head-direction signal in dysgranular retrosplenial cortex. *Nature Neuroscience* 20(2):173-175.

21 February 2017: Feb Break (no meeting)

28 February 2017: Adam Miller

- [B. Richards, F. Xia, A. Santoro, J. Husse, M. Woodin, S. Josselyn & P. Frankland \(2014\)](#). Patterns across multiple memories are identified over time. *Nature Neuroscience* 17:981–986.

7 March 2017: Norma Hernandez

- [L. Qu, T. Kahnt, S. Cole and J. Gottfried \(2016\)](#). De Novo Emergence of Odor Category Representations in the Human Brain. *Journal of Neuroscience*, 36(2):468-478.

14 March 2017: Thom Cleland

- [Iurilli & Datta \(2017\)](#). Population coding in an innately relevant olfactory area.
 - [http://www.cell.com/neuron/fulltext/S0896-6273\(17\)30094-6](http://www.cell.com/neuron/fulltext/S0896-6273(17)30094-6)
 - The main issue of interest here is to wrestle with the problem of "innately valent" odors or other stimuli – how are they recognized and represented?

21 March 2017: Marissa Rice

- [J. Balaguer, H. Spiers, D. Hassabis, C. Summerfield \(2016\)](#). Neural Mechanisms of Hierarchical Planning in a Virtual Subway Network. *Neuron*, 90:893–903.

28 March 2017: Wen-Yi Wu

- [S. Hegde, W. Capell, B. Ibrahim, J. Klett, N. Patel, A. Sougiannis and M. Kelly \(2016\)](#). Phosphodiesterase 11A (PDE11A), Enriched in Ventral Hippocampus Neurons, is Required for Consolidation of Social but not Nonsocial Memories in Mice. *Neuropsychopharmacology* 41:2920-2931.

Additional Reading:

- [S. Hegde, H. Ji, D. Oliver, N. Patel, N. Poupore, M. Shtutman and M. Kelly \(2016\)](#). PDE11A Regulates Social Behaviors And Is A Key Mechanism By Which Social Experience Sculpts The Brain. *Neuroscience* 335:151-169.

4 April 2017: Spring Break (no meeting)

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11 April 2017: Hamid Turker

- [D. Aronov, R. Nevers & D. Tank \(2017\)](#). Mapping of a non-spatial dimension by the hippocampal–entorhinal circuit. *Nature* 543:719-722.

Commentary on the main article:

- [J. Eckemann & E. Buffalo \(2017\)](#). Auditory landscape on the cognitive map. *Nature* 543:631-632.

18 April 2017: Jesse Werth

- [L. Meshulam, J. Gauthier, C. Brody, D. Tank and W. Bialek \(2016\)](#). Collective behavior of place and non{place neurons in the hippocampal network. *arXiv:1612.08935v1*.

25 April 2017: POSTPONED, will try to reschedule soon!

2 May 2017: Mike Goldstein

- [J. Krakauer, A. Ghazanfar, A. Gomez-Martin, M. MacIver and D. Poeppel \(2017\)](#). Neuroscience Needs Behavior: Correcting a Reductionist Bias. *Neuron* 93:480-490.

9 May 2017:

- Article Potluck: Bring your favorite, most insightful, most surprising, oddest or otherwise interesting article or bit of data to share with the group (time limit of 5-10 min).

Fall Semester 2017-2018

The **Cognition and Neural Systems (CNS)** Journal Club meets on **Tuesdays from 11:45 to 1:00 pm** in **Uris Hall 205**.

Presentations in the CNS JC are intended to "show us what you are interested in"; i.e., present work within your subfield that illustrates why it is interesting and broadly applicable. It is less important to choose papers that you think will be close to every attendees' heart than it is to choose papers that are blisteringly important or interesting or controversial in your own subfield, and explain/share this with the group. It's good for all of us. The corollary is that journal club members don't decide whether to attend in a given week based on what is being presented.

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Please contact [Thomas Cleland](#) or [David Smith](#) with any questions.

22 August 2017: Organizational Meeting

29 August 2017: David Smith

- Adam M. P. Miller, William Mau and David M. Smith. Ensemble coding of long-term spatial memories and future goal locations in the retrosplenial cortex.
- Note: This manuscript is a working draft, so please do not distribute it beyond the journal club. Also, don't get too hung up with the analysis methodology. I'll explain as needed.

5 September 2017: Caitlyn Finton

- [Ludwig M, Tobin VA, Callahan MF, Papadaki E, Becker A, Engelmann M, Leng G \(2013\)](#). Intranasal application of vasopressin fails to elicit changes in brain immediate-early gene expression, neural activity, and behavioural performance of rats. *Journal of Neuroendocrinology* 25:655-667.
- I have been thinking a lot about intranasal oxytocin and vasopressin. This paper suggests that there is no change in brain activity or behavior from intranasal OT and VP, although other papers have found behavioral changes.
- The following papers also were brought up during our (robust and interesting) discussion:
 - [Bartz et al. 2011](#)
 - [Churchland and Winkielman 2012](#)
 - [Rilling et al. 2014](#)
 - [Guastella and Hickie 2016](#)
 - [Quintana et al. 2016](#)

12 September 2017: Aubrey Kelly

- [J. Goodson \(2013\)](#). Deconstructing sociality, social evolution and relevant nonapeptide functions. *Psychoneuroendocrinology* 38:465-478.
- This review, written by offspring of the Cornell Psych Department, stresses two important concepts relevant to all areas represented by attendees of the CNS journal club: 1) Careful consideration needs to be taken with how we define behavior, and 2) We must utilize a comparative approach in order to understand the evolution of behavior.

19 September 2017: Khenia Swallow

- [S. Warren, E. Yacoub & G. Ghose \(2014\)](#). Featural and temporal attention selectively enhance task-appropriate representations in human primary visual cortex. *Nature Communications* 5:5643.
- This paper highlights two basic points that are important for anyone who cares about how brains work. First, attention alters the behavior of neuronal populations. As a result, tasks can impact what is represented and measured. Second, what is represented by neuronal populations is influenced by expectations along multiple dimensions, including visual features, timing, and semantics (not just space).
- Optional additional reading: [T. Çukur, S. Nishimoto, A. Huth & J. Gallant \(2013\)](#). Attention during natural vision warps semantic representation across the human brain. *Nature Neuroscience* 16(6):763-770.

26 September 2017: Angela Freeman

- [M. Sadananda, M. Woehr, R. Schwarting \(2008\)](#). Playback of 22-kHz and 50-kHz ultrasonic vocalizations induces differential c-fos expression in rat brain. *Neuroscience Letters*. 435:17-23.
- I picked my paper because it is one of very few that looks at the neural basis of rodent vocalizations. And I'm all about communication, and I did a similar study on ground squirrel communication, which I am presenting at SFN this year, so I wanted to discuss this paper to prep for what things might be good to address in my own work.

3 October 2017: Jesse Werth

- [B. Laszotczy and T. Klausberger \(2016\)](#). Hippocampal Place Cells Couple to Three Different Gamma Oscillations during Place Field Traversal. *Neuron* 91:34-40.
- Article discusses ideas central to neuronal information processing in a relatively well known brain network. We typically think of hippocampal place cells in the context of how much they fire (spike rates; e.g., with respect to place fields and the animal's physical location within an environment). The authors of this article offer an expanded framework that stresses the importance of *when* these cells fire (think small time-scales, spike-timing), rather than how much.
- A paper that came up during discussion: *Using a new approach for identifying temporal structure in neuroimaging data*, [Baldassano et al. \(2017\)](#) *propose a theory of how continuous experience is divided into events that are represented in high-level cortex, are stored in long-term memory, and influence later perception*. Khen notes: "There's a lot of interesting stuff in here, but I also find aspects of it to be pretty confusing or just wrong (if I understand them correctly)."

10 October 2017: Fall Break - No meeting

17 October 2017: Samantha Carouso

- [K. Lynch, A. Gaglio, E. Tyler, J. Cocolo, M. Louder and M. Hauber \(2017\)](#). A neural basis for password-based species recognition in an avian brood parasite. *Journal of Experimental Biology* 220:2345-2353.
- This paper can serve as a starting point for a discussion of species recognition mechanisms in general, brood parasitism behavior, vocal learning and call production and their related auditory and production brain regions, ZENK as a scientific tool, innate vs. learned behaviors (and the potential false dichotomy of that distinction), and in vivo/in ovo learning.

24 October 2017: George Prounis

- [M. Stephenson-Jones, K. Yu, S. Ahrens, J. Tucciarone, A. van Huijstee, L. Mejia, M. Penzo, L. Tai, L. Wilbrecht & B. Li \(2016\)](#). A basal ganglia circuit for evaluating action outcomes. *Nature* 539:289-293.

Additional recommended reading:

- [L. Tai, A. M. Lee, N. Benavidez, A. Bonc, L. Wilbrecht \(2012\)](#). Transient stimulation of distinct subpopulations of striatal neurons mimics changes in action value. *Nature Neuroscience* 15(9):1281-1289.
- These papers highlight the dynamic role of basal ganglia dopamine systems in decision-making and action evaluation in mice. The authors bidirectionally influence reward-based decisions via optogenetic manipulation of specific neuronal populations within the basal ganglia. Overall, these papers demonstrate the 1) the importance of dopamine in both evaluation and action, and 2) the explanatory power of linking precise, sub-circuit neural manipulations to simple behavioral tasks. My research interests include developmental changes in decision-making circuits, particularly the involvement of dopamine systems during adolescent risk-taking behavior.

31 October 2017: Adam Broitman

- [A. Broitman, M. Kahana and M. Healey \(submitted\)](#). Modeling Retest Effects in a Longitudinal Measurement Burst Design Study of Episodic Memory.
- This paper proposes a mathematical model with which to separate age-related memory changes from task-specific retest effects in a longitudinal study. This paper may be useful to anyone who conducts long-term human cognition studies, and I will discuss its potential application to my future work.

7 November 2017: Cancelled - go see the job talks this week instead!

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14 November 2017: Society for Neuroscience - No meeting

21 November 2017: Cancelled - go see Frank Castelli's defense instead!

•

28 November 2017: Wen-Yi Wu

- [T. Okuyama \(2017\)](#). Social memory engram in the hippocampus. *Neuroscience Research*, epub ahead of print, DOI: 10.1016/j.neures.2017.05.007

Spring Semester 2017-2018

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30 January 2018: Organizational Meeting

6 February 2018: Tim DeVoogd and Alex Ophir

- [R. Harris, L. O'Connell and H. Hofmann \(2017\)](#). Brain Evolution, Development, and Plasticity. In (ed) Stephen V. Shepherd, *The Wiley Handbook of Evolutionary Neuroscience, First Edition*. John Wiley & Sons, Ltd.

13 February 2018: Wen-Yi Wu

- [D. Omer, S. Maimon, L. Las, N. Ulanovsky. \(2018\)](#) Social place-cells in the bat hippocampus. *Science* 359:218–24.

20 February 2018: FEBRUARY BREAK - NO MEETING

27 February 2018: David Katz

- [R. Wood, M. Bauza, J. Krupic, S. Burton, A. Delekate, D. Chan & J. O'Keefe \(2018\)](#). The honeycomb maze provides a novel test to study hippocampal-dependent spatial navigation. *Nature* 554:102-7.
- Optional background reading: [C. Paul, G. Magdab and S. Abel \(2009\)](#). Spatial memory: Theoretical basis and comparative review on experimental methods in rodents. *Behavioral Brain Research* 203:151-164.

6 March 2018: Marissa Rice

- [D. Haun, C. Rapold, G. Janzen, and S. Levinson \(2011\)](#). Plasticity of human spatial cognition: Spatial language and cognition covary across cultures. *Cognition* 119:70-80.

13 March 2018: Lisa Hiura

- [K. Tokarev, J. Bruno, I. Ljubicic, P. Kothari, S. Helekar, O. Tchernichovski, and H. Voss \(2017\)](#). Sexual dimorphism in striatal dopaminergic responses promotes monogamy in social songbirds. *eLife* 6:e25819.

20 March 2018: Jesse Werth

- [Kass MD, Czarnecki LA, Moberly AH, McGann JP \(2017\)](#) Differences in peripheral sensory input to the olfactory bulb between male and female mice. *Scientific Reports* 7:45851. <http://dx.doi.org/10.1038/srep45851>

27 March 2018: Jack Cook

- Jack will be presenting work from his research project developing an analytical framework for odor learning. The readings are to get everybody in the right frame of mind for discussing this work in particular and the overall approach in general.
- [Zaidi Q, Victor J, McDermott J, Geffen M, Bensmaia SI, Cleland TA \(2013\)](#). Perceptual spaces: mathematical structures to neural mechanisms. *J Neurosci* 33(45): 17597-17602.
- [Lee JM \(2013\)](#). Introduction to smooth manifolds, pages 1-17.
- For some additional background (optional):
 - [Lee JM \(2011\)](#). Introduction to topological manifolds, 2nd ed., pages 1-17.

3 April 2018: SPRING BREAK - NO MEETING

10 April 2018: Dev Laxman Subramanian

- [D. Khodagholy, J. Gelinis, G. Buzsáki \(2017\)](#). Learning-enhanced coupling between ripple oscillations in association cortices and hippocampus. *Science* 358:369–72.

17 April 2018: NO MEETING

24 April 2018: Angela Freeman

- [S. Dloniak, J. French & K. Holekamp \(2006\)](#). Rank-related maternal effects of androgens on behaviour in wild spotted hyaenas. *Nature* 440:1190-1193.

1 May 2018: Roy Moyal

- [Singer W \(2013\)](#). Cortical dynamics revisited. *Trends in Cognitive Sciences* 17(12):616-626.
- Optional: [Samaha J, Postle BR \(2015\)](#) The speed of alpha-band oscillations predicts the temporal resolution of visual perception. *Current Biology* 25: 1-6.
- For an introduction to the concept of criticality and its relevance to neuroscience: [Beggs JM, Timme N \(2012\)](#) Being critical of criticality in the brain. *Frontiers in Physiology* 3:163.

8 May 2018: Article Potluck

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Fall Semester 2018-2019

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28 August 2018: Organizational Meeting

4 September 2018: Dave Bulkin

- [D. Bulkin, D. Sinclair, L.M. Law, D. Smith \(working manuscript\)](#). Hippocampal State Transitions at Event Boundaries.

11 September 2018: Santiago Forero

- [R. Cui, P. Delclos, M. Schumer and G. Rosenthal \(2018\)](#). Early social learning triggers neurogenomic expression changes in a swordtail fish. *Proc. R. Soc. B* 284: 20170701

18 September 2018: Marissa Rice

- [C. Holmes, N. Newcombe, T. Shipley \(2018\)](#). Move to learn: Integrating spatial information from multiple viewpoints. *Cognition* 178:7-25

25 September 2018: David Katz

- [H. Ito, E. Moser and M.B. Moser \(2018\)](#). Supramammillary Nucleus Modulates Spike-Time Coordination in the Prefrontal-Thalamo-Hippocampal Circuit during Navigation. *Neuron* 99, 576–587

2 October 2018 (t): Celine Cammarata

- [Akrami A, Kopec CD, Diamond ME, Brody CD \(2018\)](#). Posterior parietal cortex represents sensory history and mediates its effects on behaviour. *Nature* 554:368-372, with supplementary methods and figures.

9 October 2018: *FALL BREAK - NO MEETING*

16 October 2018: Dev Laxman Subramanian

- [S. Robinson, T. Todd, A. Pasternak, B. Luikart, P. Skelton, D. Urban and D. Bucci \(2014\)](#). Chemogenetic Silencing of Neurons in Retrosplenial Cortex Disrupts Sensory Preconditioning. *Journal of Neuroscience* 34(33):10982-8.

Optional Additional Readings:

- [T. Todd, N. DeAngeli, M. Jiang and D. Bucci \(2017\)](#). Retrograde Amnesia of Contextual Fear Conditioning: Evidence for Retrosplenial Cortex Involvement in Configural Processing. *Behavioral Neuroscience* 131(1):46–54.
- [M. Jiang, N. DeAngeli, D. Bucci & T. Todd, \(2018\)](#). Retrosplenial Cortex Has a Time-Dependent Role in Memory for Visual Stimuli. *Behavioral Neuroscience*. Advance online publication. <http://dx.doi.org/10.1037/bne0000229>.

23 October 2018 (t): Wen-Yi Wu

- [T. Meira, F. Leroy, E. Buss, A. Oliva, J. Park & S. Siegelbaum \(2018\)](#). A hippocampal circuit linking dorsal CA2 to ventral CA1 critical for social memory dynamics. *Nature Communications*, DOI: 10.1038/s41467-018-06501-w

30 October 2018: Justas Birgiolas, University of Arizona (Postdoc candidate with Thom Cleland)

- "The Road to San Junipero: modeling the brain with supercomputers. Computational methods and a case study of the olfactory bulb."
- No readings necessary

6 November 2018: *SOCIETY FOR NEUROSCIENCE - NO MEETING*

13 November 2018: Lisa Hiura

- [L. Hung, S. Neuner, J. Polepalli, K. Beier, M. Wright, J. Walsh, E. Lewis, L. Luo, K. Deisseroth, G. Dölen, R. Malenka \(2017\)](#). Gating of social reward by oxytocin in the ventral tegmental area. *Science* 357:1406–11.
- FOLLOWUP paper: [Bakos et al \(2018\)](#) *Molecular Mechanisms of Oxytocin Signaling at the Synaptic Connection*. *Neural Plasticity*: 4864107.

20 November 2018: Jack Cook

- [Cook J, Cleland TA \(in prep\)](#) The geometry of olfactory learning.
- It's pretty mathy (the fleshing-out text has yet to be added) but the gist is that this is a formal way to model the learning of odor signals, including their natural variance, and how this learning process enables the learning of real-world odors as dynamically constructed discrete categories.

27 November 2018: Mary Elson

4 December 2018: *ARTICLE POTLUCK*

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29 January 2019: Organizational Meeting

5 February 2019: David Field

- [Olshausen BA, Field DJ \(2006\)](#) What is the other 85 percent of V1 doing? In: Sejnowski T, van Hemmen L (Eds.), *Problems in Systems Neuroscience* 23: 182-211.]

Optional supplementary reading:

- [Shoham S, O'Connor DH, Segev R \(2006\)](#) How silent is the brain: is there a "dark matter" problem in neuroscience? *Journal of Comparative Physiology A* 192.8: 777-784.

12 February 2019: Mary Elson

- [H. Barr & S. Woolley \(2018\)](#). Developmental auditory exposure shapes responses of catecholaminergic neurons to socially-modulated song. *Scientific Reports* 8:11717.

19 February 2019: Marissa Rice

- [B. Sonnenberg, C. Branch, A. Pitera, E. Bridge, and V. Pravosudov \(2019\)](#). Natural Selection and Spatial Cognition in Wild Food-Caching Mountain Chickadees. *Current Biology* 29:1-7.

26 February 2019: FEBRUARY BREAK - NO MEETING

•

5 March 2019: Lindsay Sailer

- [T. Sterley, D. Baimoukhametova, T. Füzesi, A. Zurek, N. Daviu, N. Rasiah, D. Rosenegger and J. Bains \(2018\)](#). Social transmission and buffering of synaptic changes after stress. *Nature Neuroscience* 21:393-403.

12 March 2019: David Katz

- [H. Davoudi and D. Foster \(2019\)](#). Acute silencing of hippocampal CA3 reveals a dominant role in place field responses. *Nature Neuroscience*, 22: 337–342.
- [Supplemental Info](#)

19 March 2019: Cheong Yi

- [D. Ong, J. Zaki, N. Goodman \(2015\)](#). Affective cognition: Exploring lay theories of emotion. *Cognition* 143:141-162.

26 March 2019: Dev Laxman Subramanian

- [M. Milczarek, S. Vann, F. Sengpiel \(2019\)](#). Spatial Memory Engram in the Mouse Retrosplenial Cortex. *Current Biology* 28:1–6.

2 April 2019: SPRING BREAK - NO MEETING

9 April 2019: Wen-Yi Wu

- The hippocampus and social context. Wen-Yi will discuss findings from her project dorsal and ventral hippocampal responses to manipulations of the social context.

16 April 2019 (t): David Smith

- Recent data on the role of the retrosplenial cortex in context (no readings).

23 April 2019: Grainger Sasso

- [N. Renier et al \(2016\)](#). Mapping of Brain Activity by Automated Volume Analysis of Immediate Early Genes. *Cell* 165, 1789-1802.

30 April 2019: TBD

7 May 2019: ARTICLE POTLUCK

- Bring your favorite, most insightful, most surprising, oddest, or otherwise somehow compelling article or bit of data to share with the group (time limit of 5-10 min each).

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3 September 2019: Organizational Meeting

10 September 2019: Celine Cammarata

- [V. Nambodiri, J. Otis, K. van Heeswijk, E. Voets, R. Alghorazi, J. Rodriguez-Romaguera, S. Mihalas & G. Stuber \(2019\)](#). Single-cell activity tracking reveals that orbitofrontal neurons acquire and maintain a long-term memory to guide behavioral adaptation. *Nature Neuroscience* 22: 1110–1121.

17 September 2019: Mary Elson

- [M. Davis, K. Grogan and D. Maney \(2019\)](#). Expression of oxytocin receptors in the zebra finch brain during vocal development. bioRxiv preprint doi: <http://dx.doi.org/10.1101/739623>.

24 September 2019: Lindsay Sailer

- [L. Wang, V. Talwar, T. Osakada, A. Kuang, Z. Guo, T. Yamaguchi and D. Lin \(2019\)](#). Hypothalamic Control of Conspecific Self-Defense. *Cell Reports* 26:1747–1758.

1 October 2019: Jesse Werth

- [K. Katori, H. Manabe, A. Nakashima, E. Dunfu, T. Sasaki, Y. Ikegaya, H. Takeuchi \(2017\)](#). Sharp wave-associated activity patterns of cortical neurons in the mouse piriform cortex. *European J Neurosci*, 48:3246–3254.

Optional Additional Readings:

- [A. Lee and M. Wilson \(2002\)](#). Memory of Sequential Experience in the Hippocampus during Slow Wave Sleep. *Neuron* 36:1183-94.

- [H. Manabe, I. Kusumoto-Yoshida, M. Ota and K. Mori \(2011\)](#). Olfactory Cortex Generates Synchronized Top-Down Inputs to the Olfactory Bulb during Slow-Wave Sleep. *J Neurosci*, 31(22):8123–33.

8 October 2019: Mike Goldstein

- TBD

15 October 2019: *FALL BREAK - NO MEETING*

22 October 2019: *SOCIETY FOR NEUROSCIENCE - NO MEETING*

29 October 2019: Santiago Forero

- [A. Hamid, J. Pettibone, O. Mabrouk, V. Hetrick, R. Schmidt, C. Vander Weele, R. Kennedy, B. Aragona & J. Berke \(2016\)](#). Mesolimbic dopamine signals the value of work. *Nature Neuroscience*, 19(1):117-26.

5 November 2019: Khenia Swallow

- [M. Yebra, A. Galarza-Vallejo, V. Soto-Leon, J. Gonzalez-Rosa, A. de Berker, S. Bestmann, A. Oliviero, M. Kroes & B. Strange \(2019\)](#). Action boosts episodic memory encoding in humans via engagement of a noradrenergic system. *Nature Communications*, doi.org/10.1038/s41467-019-11358-8.

12 November 2019: Faiza Ahmad

- [M. Robinson, S. Warlow, and K. Berridge \(2014\)](#). Optogenetic Excitation of Central Amygdala Amplifies and Narrows Incentive Motivation to Pursue One Reward Above Another. *J Neurosci* 34(50):16567–16580.
- *NOTE: We had to redistill this 24MB file down to size in order to post it here; to do so the embedded Flash "Movie 1" on page 16571 was removed. For the full original PDF file, go to <https://www.jneurosci.org/content/jneuro/34/50/16567.full.pdf>.*

19 November 2019: Wen-Yi Wu

- [R. Rao, M. von Heimendahl, V. Bahr, and M. Brecht. \(2019\)](#). Neuronal Responses to Conspecifics in the Ventral CA1. *Cell Reports* 27:3460–3472.

26 November 2019: **No Meeting**

Optional Readings for Thanksgiving week:

- [Buchwalder and Huber-Eicher \(2003\)](#). A brief report on aggressive interactions within and between groups of domestic turkeys (*Meleagris gallopavo*). *Applied Animal Behavior Science*, 84:75-80.
- A Scientific American article on the topic can be found [here](#).

3 December 2019: Lisa Hiura

- [J. Scribner, E. Vance, D. Protter, W. Sheeran, E. Saslow, R. Cameron, E. Klein, J. Jimenez, M. Kheirbek, Z. Donaldson \(2019\)](#). A neuronal signature for monogamous reunion. *BioRxiv preprint*, doi: <http://dx.doi.org/10.1101/675959>.

10 December 2019: Article Potluck - bring your favorite recent finding or something from your own research to share with the group!

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21 January 2020: Organizational Meeting

28 January 2020: Tim DeVoogd

- [P. Rinnert, M. Kirschhock and A. Nieder \(2019\)](#). Neuronal Correlates of Spatial Working Memory in the Endbrain of Crows. *Current Biology*, 29: 2616-2624.

4 February 2020: Mary Elson

- [A. Dieza, A. Cuid, S. MacDougall-Shackletona \(2019\)](#). The neural response of female zebra finches (*Taeniopygia guttata*) to conspecific, heterospecific, and isolate song depends on early-life song exposure. *Behavioral Processes* 163:67-44.

11 February 2020: Savanna Butler

- [E. Edsinger and G. Dolen \(2018\)](#). A Conserved Role for Serotonergic Neurotransmission in Mediating Social Behavior in Octopus. *Current Biology* 28, 3136-3142.

18 February 2020: Katie Tschida

- [Y. Jung, A. Kennedy, H. Chiu, F. Mohammad, A. Claridge-Chang, D. Anderson \(2020\)](#) Neurons that Function within an Integrator to Promote a Persistent Behavioral State in *Drosophila*. *Neuron* 105, 322-333.

25 February 2020: Feb Break - no class

3 March 2020: Dev Laxman Subramanian

- [A. Alexander, L. Rangel, D. Tingley, D. Nitz \(2018\)](#). Neurophysiological Signatures of Temporal Coordination Between Retrosplenial Cortex and the Hippocampal Formation. *Behavioral Neuroscience*, 132(5):453–468.

10 March 2020: Julia Jun

- [A. de Sousa, K. Cowansage, I. Zutshi, L. Cardozo, E. Yoo, S. Leutgeb and M. Mayford \(2019\)](#). Optogenetic reactivation of memory ensembles in the retrosplenial cortex induces systems consolidation. *PNAS* 116(17):8576-8581.

17 March 2020: Hamid Turker

- [E. Ester, T. Sprague and J. Serences \(2019\)](#). Categorical Biases in Human Occipitoparietal Cortex. *Journal of Neuroscience*. DOI: <https://doi.org/10.1523/JNEUROSCI.2700-19.2019>

24 March 2020: Da Lu

- TBA

30 March 2020: Spring Break - no class

- TBA

7 April 2020: Chialin Liao

- TBA

14 April 2020: Santi Forero

- TBA

21 April 2020: Celine Cammarata

- TBA

28 April 2020: Jack Cook

- TBA

5 May 2020: Article Potluck - bring your favorite recent finding or something from your own research to share with the group!

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9 February 2021: Organizational Meeting

16 February 2021: Christiane Linster

- [Daie, Svoboda, Druckmann 2021](#), Circuit motifs supporting short-term memory

23 February 2021: Cancelled

2 March 2021: Jesse Werth

- [Weiss, Soroka, Gorodisky, Shushan, Snitz, Weissgross, Furman-Haran, Dholander, Sobel 2020](#), Human olfaction without apparent olfactory bulbs.

9 March 2021: Cornell Wellness Day - NO CLASSES

16 March 2021: Thomas Cleland

- [Kanta, Pare, Headley 2019](#), Closed-loop control of gamma oscillations in the amygdala demonstrates their role in spatial memory consolidation.

23 March 2021: Michael Mariscal

- [Grothe, Neitzel, Mandon, Kreiter 2012](#), Switching neuronal inputs by differential modulations of gamma-band phase-coherence.

30 March 2021: Santi Forero

- [Xing, Mack, Guo, Zhang, Ramirez, Yang, Lin, Wang, Li, Gau 2020](#), A subpopulation of prefrontal cortical neurons is required for social memory.
 - Followup FYI: [Robinson et al 2014](#), regarding the segmentation of different simultaneously encountered stimuli. Central nucleus of the amygdala is involved in narrowing incentive motivation to one stimulus over another.

6 April 2021: Wendy Yang

- [Gava, McHugh, Lefevre, Lopes dos Santos, Trouche, El Gaby, Schultz, Dupret 2021](#), Integrating new memories into the hippocampal network activity space.

13 April 2021: David Smith

- [Ressler, Goode, Kim, Ramanathan, Maren 2021](#), Covert capture and attenuation of a hippocampus-dependent fear memory.

20 April 2021: Patryk Ziobro

- [Gao S-C, Wei Y-C, Wang S-R, Xu X-H 2019](#), Medial preoptic area modulates courtship ultrasonic vocalization in adult male mice.

27 April 2021: Nicole Pranic

- [Zimmer MR, Fonseca AHO, Iyilikci O, Dai Pra R, Dietrich MO 2019](#), Functional ontogeny of hypothalamic AgRP neurons in neonatal mouse behaviors.

4 May 2021: Lindsay Sailer

- [Stagkourakis S, Spigolon G, Liu G, Anderson DJ 2020](#), Experience-dependent plasticity in an innate social behavior is mediated by hypothalamic LTP.

11 May 2021: Article Potluck - bring your favorite recent finding or something from your own research to share with the group!

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31 August 2021: Organizational Meeting

7 September 2021: Julia Jun

- [Scott GA, Liu MC, Tahir NB, Zabder NK, Song Y, Greba Q, Howland JG \(2020\)](#). Roles of the medial prefrontal cortex, mediodorsal thalamus, and their combined circuit for performance of the odor span task in rats: analysis of memory capacity and foraging behavior. *Learning & Memory* 27 (2):67-77.

14 September 2021: Jesse Werth

- [Schoonover CE, Ohashi SN, Axel R, Fink AJP \(2021\)](#). Representational drift in primary olfactory cortex. *Nature* 594: 541-546.
- *Followup papers of interest:*
 - [Raman D, O'Leary T \(2021\)](#). Optimal plasticity for memory maintenance during ongoing synaptic change. *eLife* 10:e62912. (Online only; PDF not yet available).

21 September 2021: Margaret Cruz

- [Meinhardt J, et al. \(2021\)](#). Olfactory transmucosal SARS-CoV-2 invasion as a port of central nervous system entry in individuals with COVID-19. *Nature Neuroscience* 24: 168-175.
 - The role of brain microglia in synaptic plasticity (as well as the immune response) arose during discussion. Here are a couple of starting-point reviews of the topic for those interested.
 - [Morris GP et al. \(2013\)](#). Microglia: a new frontier for synaptic plasticity, learning and memory, and neurodegenerative disease research.
 - [Augusto-Oliveira M et al. \(2021\)](#). Lifestyle-dependent microglial plasticity: training the brain guardians.

28 September 2021: Celia McLean

- [Vahaba DM, Hecsh A, Remage-Healey L \(2020\)](#). Neuroestrogen synthesis modifies neural representations of learned song without altering vocal imitation in developing songbirds. *Scientific Reports* 10:3602.

5 October 2021: Michael Mariscal

- [Kato HK, Chu MW, Isaacson JS, Komiyama T \(2012\)](#). Dynamic sensory representations in the olfactory bulb: modulation by wakefulness and experience. *Neuron* 76: 962-975.

12 October 2021: FALL BREAK / Indigenous Peoples' Day

- No meeting

19 October 2021: Lia Chen

- [Cornblath EJ, Li HL, ..., Henderson MX \(2021\)](#). Computational modeling of tau pathology spread reveals patterns of regional vulnerability and the impact of a genetic risk factor. *Science Advances* 7: eabg6677.
 - Followups from discussion:
 - Seminal & review papers about graph theoretic analysis of brain networks: [Bassett & Bullmore 2006](#), [Bullmore & Sporns 2009](#), [Bullmore & Sporns 2012](#), [Bassett & Bullmore 2017](#)
 - Dementia papers utilizing brain network analyses: [Rittman et al 2016](#), [Rittman et al 2019](#)

26 October 2021: Wendy Yang

- [Rangel MJ, Baldo MVC, Canteras NS \(2018\)](#). Influence of the anteromedial thalamus on social defeat-associated contextual fear memory. *Behavioural Brain Research* 339: 269-277.

2 November 2021: Nicole Pranic

- [Chen J, Markowitz JE, ..., Datta SR, Stowers L \(2021\)](#). Flexible scaling and persistence of social vocal communication. *Nature* 593: 108-113.

9 November 2021: Society for Neuroscience Conference (virtual)

- No meeting

16 November 2021: Santi Forero

- [Gobrogge KL, Jia X, Liu Y, Wang Z \(2017\)](#). Neurochemical mediation of affiliation and aggression associated with pair-bonding. *Biological Psychiatry* 81: 231-242.

23 November 2021: Nora Prior

- [Jaric I, Rocks D, Greally JM, Suzuki M, Kundakovic M \(2019\)](#). Chromatin organization in the female mouse brain fluctuates across the oestrous cycle. *Nature Communications* 10:2851.

30 November 2021: David Smith

- New findings and questions about retrosplenial cortex

7 December 2021: CANCELLED – see you all next year!

Spring Semester 2021-2022

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25 Jan 2022: Organizational Meeting

1 February 2022: No meeting (owing to Covid-19 policy)

8 February 2022: No meeting

15 February 2022: Nicole Pranic

- [Wu YE, Dang J, Kingsbury L, Zhang M, Sun F, Hu RK, Hong W \(2021\)](#) Neural control of affiliative touch in prosocial interaction. *Nature* 599: 262-267.

22 February 2022: Michael Mariscal

- [Wu A, Yu B, Chen Q, Matthews GA, Lu C, Campbell E, Tye KM, Komiyama T \(2020\)](#) Context-dependent plasticity of adult-born neurons regulated by cortical feedback. *Science Advances* 6: eabc8319.

1 March 2022: No meeting ("February" break)

8 March 2022: No meeting (Thom out of town)

15 March 2022: Xin Zhao

- [Hu RK, Zuo Y, Ly T, Wang J, Meera P, Wu YE, Hong W \(2021\)](#). An amygdala-to-hypothalamus circuit for social reward. *Nature Neuroscience* 24: 831-842.

22 March 2022: No meeting (Thom has been posted elsewhere during this time slot by the powers)

29 March 2022: Patryk Ziobro

- Patryk presents "an outside perspective on my research"

5 April 2022: No meeting (Spring Break)

12 April 2022: Julia Jun

- [Anderson MC, Floresco SB \(2022\)](#) Prefrontal-hippocampal interactions supporting the extinction of emotional memories: the retrieval stopping model. *Neuropsychopharmacology* 47: 180-195.

19 April 2022: SNOWED OUT!

26 April 2022: Lindsay Sailer

- No Reading – This will be a practice talk for an invited talk that Lindsay will be giving at Salisbury University (out near the Maryland coast). Bring your interesting comments and constructive criticisms!

3 May 2022: Nora Prior

- Intention and rigor in scientific progress.

See you all in the Fall!

Fall Semester 2022-2023

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23 August 2022: Organizational Meeting

30 August 2022: Tim DeVoogd

- [Ksepka DT et al \(2020\)](#), Tempo and pattern of brain size evolution. *Current Biology* 30: 2026-2036.

6 September 2022: Thom Cleland

- [Herculano-Houzel S \(2014\)](#), The glia/neuron ratio: how it varies uniformly across brain structures and species and what that means for brain physiology and evolution. *Glia* 62:1377-1391.

13 September 2022: Julia Jun

- [Bubb EJ, Aggleton JP, O'Mara SM, Nelson AJD \(2021\)](#), Chemogenetics reveal an anterior cingulate-thalamic pathway for attending to task-relevant information. *Cerebral Cortex* 31: 2169-2186.

20 September 2022: Wendy Yang

- [Doron A, Rubin A, Benmelech-Chovav A, Benaim N, Carmi T, Refaeli R, Novick N, Kreisel T, Ziv Y, Goshen, I \(2022\)](#), Hippocampal astrocytes encode reward location. *Nature*. Online ahead of print, doi: 10.1038/s41586-022-05146-6.

27 September 2022: Santi Forero

- [Amadei EA, Johnson ZV, Kwon YJ, Shpiner AC, Saravanan V, Mays WD, Ryan SJ, Walum H, Rainnie DG, Young LJ, Liu RC \(2017\)](#), Dynamic corticostriatal activity biases social bonding in monogamous female prairie voles. *Nature* 546: 297-301.

4 October 2022: Mylo Skolnick

- [Xie L, Kang H, Xu Q, Chen MJ, Liao Y, Thiyagarajan M, O'Donnell J, Christensen DJ, Nicholson C, Iliff JJ, Takano T, Deane R, Nedergaard M \(2013\)](#), Sleep drives metabolite clearance from the adult brain. *Science* 342: 373-377.

11 October 2022: *No meeting (Fall Break)*

18 October 2022: Lindsay Sailer

- Lindsay will present some of her work, titled: The impacts of early-life adversity and social experience on social and neural development in prairie voles. No readings.

25 October 2022: Connie Lin

- Skim for field background: [Azzazy S, Ghaffarianhoseini A, GhaffarianHoseini A, Naismith N, Doborjeh Z \(2021\)](#), A critical review on the impact of built environment on users' measured brain activity. *Architectural Science Review* 64(4): 319-335.
- Main paper: [Kuhn S, Duzel S, Eibich P, Krekel C, Wustemann H, Kolbe J, Martensson J, Goebel J, Gallinat J, Wagner GG, Lindenberger U \(2017\)](#), In search of features that constitute an "enriched environment" in humans: Associations between geographical properties and brain structure. *Nature Scientific Reports* 7: 11920.

1 November 2022: Celia McLean

- [Bromberg-Martin, E. S. and Hikosaka, O. \(2009\)](#). Midbrain Dopamine Neurons Signal Preference for Advance Information about Upcoming Rewards. *Neuron* 63, 119-126.

8 November 2022: Wen-Yi Wu

- [Chae H, Banerjee A, Dussauze M, Albeanu DF \(2022\)](#) Long-range functional loops in the mouse olfactory system and their roles in computing odor identity. *Neuron* 110: 1-16.

15 November 2022: Yidan Chen

- [Bowles et al. \(2022\)](#). Vagus nerve stimulation drives selective circuit modulation through cholinergic reinforcement. *Neuron* 110: 2867–288.

22 November 2022: Hamid Turker

- [Widloski J, Foster DJ \(2022\)](#). Flexible rerouting of hippocampal replay sequences around changing barriers in the absence of global place field remapping. *Neuron* 110: 1547-1558.

29 November 2022: Nora Prior

- Nora will speak about her own current work: *An integrated social-sensory framework of social behavior: preliminary studies in finches and voles*.

Until next year...

Spring Semester 2022-2023

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24 January 2023: Organizational Meeting

31 January 2023: Thom Cleland

- [Bosman CA, Schoffelen J-M, Brunet N, Oostenveld R, Bastos AM, Womelsdorf T, Rubehn B, Stieglitz T, De Weerd P, Fries P \(2012\)](#). Attentional stimulus selection through selective synchronization between monkey visual areas. *Neuron* 75: 875-888.

7 February 2023: Mary Elson

- [Alger SJ, Stevenson SA, Armenta Vega A, Kelm-Nelson CA, Juang CV, Ritters LV \(2022\)](#).. Differences in dopamine and opioid receptor ratios in the nucleus accumbens relate to physical contact and undirected song in pair-bonded zebra finches. *Behavioral Neuroscience* 136: 72-83.

14 February 2023: Lindsay Sailer

- [Ben-Ami Bartal I, Breton JM, Sheng H, Long KLP, Chen S, Halliday A, Kenney JW, Wheeler AL, Frankland P, Shilyansky C, Deisseroth K, Keltner D, Kaufer D \(2021\)](#).. Neural correlates of ingroup bias for prosociality in rats. *eLife* 10: e65582.

21 February 2023: Wendy Yang

- [Dario Campagner, Ruben Vale, Yu Lin Tan, Panagiota Iordanidou, Oriol Pavón Arocas, Federico Claudi, A. Vanessa Stempel, Sepiedeh Keshavarzi, Rasmus S. Petersen, Troy W. Margrie1 & Tiago Branco \(2022\)](#).. A cortico-collicular circuit for orienting to shelter during escape. *Nature* 613.

28 February 2023: **NO MEETING - FEBRUARY BREAK**

7 March 2023: Celia McLean

- [Benichov JI, Benezra SE, Vallentin D, Globerson E, Long MA, Tchernichovski O \(2016\)](#). The forebrain song system mediates predictive call timing in female and male zebra finches. *Current Biology* 26: 309-318.

14 March 2023: <CANCELLED due to Cornell snow closure >

21 March 2023: David Zheng

- [Yang T, Bayless DW, Wei Y, Landayan D, Marcelo IM, Wang Y, DeNardo LA, Luo L, Druckmann S, Shah NM \(2023\)](#).. Hypothalamic neurons that mirror aggression. *Cell* 186: 1-17.

28 March 2023: Yidan Chen

- [Jiang Y, Mi Q, Zhu L \(2023\)](#). Neurocomputational mechanisms of real-time distributed learning on social networks. *Nature Neuroscience*, epub at <https://doi.org/10.1038/s41593-023-01258-y>

4 April 2023: **NO MEETING - SPRING BREAK**

11 April 2023: Wen-Yi Wu

- [Medinaceli Quintela R, Bauer J, Wallhorn L, Le K, Brunet D, Rothermel M \(2020\)](#). Dynamic impairment of olfactory behavior and signaling mediated by an olfactory corticofugal system. *Journal of Neuroscience* 40(38): 7269-7285.

- Supplementary Reading (review paper): [Renata Medinaceli Quintela, Daniela Brunert and Markus Rotherme \(2022\)](#). Functional role of the anterior olfactory nucleus in sensory information processing. *Neuroforum* 28(3):169–175.

18 April 2023: Santi Forero

- [W. Lee, H. Dowd, C. Nikain, M. Dwartz, E. Yang & J. Curley \(2021\)](#). Effect of relative social rank within a social hierarchy on neural activation in response to familiar or unfamiliar social signals. *Scientific Reports* 11:2864.

25 April 2023: CANCELLED: Susanna Zheng

- [Carcea I, López Caraballo N, ..., Sullivan RM, Froemke RC \(2021\)](#). Oxytocin neurons enable social transmission of maternal behavior. *Nature* 596: 553-557.

2 May 2023: Julia Jun

- [Maggi S, Humphries MD \(2022\)](#). Activity subspaces in medial prefrontal cortex distinguish states of the world. *J Neuroscience* 42(20): 4131-4146.

9 May 2023: Jeremy Spool (U Mass Amherst)

- *Connecting auditory and social neural systems in gregarious songbirds* [No readings]
- See [Jeremy's website](#) for an overview of his work

Until next fall...

Fall Semester 2023-2024

22 August 2023: Organizational Meeting

29 August 2023: Dev Subramanian

- A Comparison of Retrosplenial and Hippocampal Spatial and Contextual Firing Patterns (Dev's latest research)
- Optional Background reading: [AMP Miller, LC Vedder, LM Law and DM Smith \(2014\)](#). Cues, context, and long-term memory: the role of the retrosplenial cortex in spatial cognition. *Frontiers in Human Neuroscience*. 8:586.
- Mentioned during presentation: [Tang G, Shah A, Michmizos KP \(2019\)](#) Spiking neural network on neuromorphic hardware for energy-efficient unidimensional SLAM. *arXiv* 1903.02504v2.

5 September 2023: David Zheng

- [N Gloveli, J Simonnet, W Tang, M Concha-Miranda, E Maier, A Dvorchak, D Schmitz and M Brecht \(2023\)](#). Play and tickling responses map to the lateral columns of the rat periaqueductal gray. *Neuron* 111, 1-12.

12 September 2023: Julia Jun

- [AE McLaughlin & AD Redish \(2023\)](#). Optogenetic disruption of the prelimbic cortex alters long-term decision strategy but not valuation on a spatial delay discounting task. *Neurobiology of Learning and Memory* 200 107734.

19 September 2023: James Cunningham

- [Luisier A-C, Petitpierre G, Berod AC, Garcia-Burgos D, Bensafi M \(2018\)](#). Effects of familiarization on odor hedonic responses and food choices in children with autism spectrum disorders. *Autism* 23(6): 1460-1471.
- Background information in this optional review: [Barros F, Soares SC \(2020\)](#). Giving meaning to the social world in autism spectrum disorders: olfaction as a missing piece of the puzzle?

26 September 2023: Lindsay Sailer

- Lindsay will present results from her collaboration with Caitlyn Finton: *Hippocampal CA1 lesions impact mating tactics in prairie voles*

3 October 2023 (David out of town): Xiyu Mei

- [Mei L, Yan R, Yin L, Sullivan RM, Lin D \(2023\)](#). Antagonistic circuits mediating infanticide and maternal care in female mice. *Nature* 618: 1006.

10 October 2023: **NO MEETING - FALL BREAK**

17 October 2023 (Thom may be absent): Wendy Yang

- [A Sarel, S Palgi, D Blum, J Aljadeff, L Las & N Ulanovsky \(2022\)](#). Natural switches in behaviour rapidly modulate hippocampal coding. *Nature* 609: 119-157.

24 October 2023: Marta Reales Moreno - **CANCELLED, will be rescheduled for a later date.**

- [Y. Yu, A. Tsai, C. Ou, C. Cheng, F. Chang, B. Shyu and A. Huang \(2023\)](#). Optogenetic stimulation in the medial prefrontal cortex modulates stimulus valence from rewarding and aversive to neutral states. *Frontiers in Psychiatry*, DOI 10.3389/fpsyt.2023.1119803.

31 October 2023: Xin Zhao

- Xin will be presenting work from his project: *Social isolation acts on hypothalamic neurons to promote social behavior in female mice*. Looking forward to feedback and discussion!

7 November 2023: Marta Reales Moreno - Rescheduled.

- [Y. Yu, A. Tsai, C. Ou, C. Cheng, F. Chang, B. Shyu and A. Huang \(2023\)](#). Optogenetic stimulation in the medial prefrontal cortex modulates stimulus valence from rewarding and aversive to neutral states. *Frontiers in Psychiatry*, DOI 10.3389/fpsyt.2023.1119803.

14 November 2023: ***NO MEETING - SOCIETY FOR NEUROSCIENCE***

21 November 2023: SFN Show and Tell

28 November 2023: Shiping Li

- [R. Hattori, B. Danskin, Z. Babic, N. Mlynaryk, T. Komiyama \(2019\)](#). Area-Specificity and Plasticity of History-Dependent Value Coding During Learning. *Cell* 177:1858-72.

Until next spring...
