

References

- Abbott, L.F., and Dayan, P. (1999). The effect of correlated variability on the accuracy of a population code. *Neural Computation 11*, 91-101.
- Abeles, M. (1991). *Corticonics: neural circuits of the cerebral cortex* (Cambridge: Cambridge University Press).
- Abeles, M., and Goldstein, M.H. (1977). Multi-Spike Train Analysis. *Proceedings of the IEEE 65*, 762-773.
- Acsady, L., Kamondi, A., Sik, A., Freund, T., and Buzsaki, G. (1998). GABAergic cells are the major postsynaptic targets of mossy fibers in the rat hippocampus. *J Neurosci 18*, 3386-3403.
- Adcock, R.A., Thangavel, A., Whitfield-Gabrieli, S., Knutson, B., and Gabrieli, J.D. (2006). Reward-motivated learning: mesolimbic activation precedes memory formation. *Neuron 50*, 507-517.
- Adolphs, R., Cahill, L., Schul, R., and Babinsky, R. (1997). Impaired declarative memory for emotional material following bilateral amygdala damage in humans. *Learning & Memory 4*, 291-300.
- Adolphs, R., Tranel, D., and Denburg, N. (2000). Impaired emotional declarative memory following unilateral amygdala damage. *Learning & Memory 7*, 180-186.
- Aggleton, J.P. (2000). *The Amygdala: A Functional Analysis* (Oxford University Press).
- Aksanova, T.I., Chibirova, O.K., Dryga, O.A., Tetko, I.V., Benabid, A.L., and Villa, A.E. (2003). An unsupervised automatic method for sorting neuronal spike waveforms in awake and freely moving animals. *Methods 30*, 178-187.
- Allman, J.M., Hakeem, A., Erwin, J.M., Nimchinsky, E., and Hof, P. (2001). The anterior cingulate cortex - The evolution of an interface between emotion and cognition. *Unity of Knowledge: The Convergence of Natural and Human Science 935*, 107-117.
- Althoff, R.R., and Cohen, N.J. (1999). Eye-movement-based memory effect: A reprocessing effect in face perception. *Journal of Experimental Psychology-Learning Memory and Cognition 25*, 997-1010.
- Amaral, D.G., Ishizuka, N., and Claiborne, B. (1990). Neurons, numbers and the hippocampal network. *Prog Brain Res 83*, 1-11.
- Amaral, D.G., and Lavenex, P. (2007). Hippocampal Neuroanatomy. In *The Hippocampus Book*, P. Andersen, R. Morris, D.G. Amaral, T. Bliss, and J. O'Keefe, eds. (Oxford University Press), pp. 37-114.
- Andersen, P., Morris, R., Amaral, D.G., Bliss, T., and O'Keefe, J. (2007). *The Hippocampus Book* (Oxford University Press).

- Andersen, R.A., Musallam, S., and Pesaran, B. (2004). Selecting the signals for a brain-machine interface. *Curr Opin Neurobiol* 14, 720-726.
- Asaad, W.F., Rainer, G., and Miller, E.K. (1998). Neural activity in the primate prefrontal cortex during associative learning. *Neuron* 21, 1399-1407.
- Atiya, A.F. (1992). Recognition of multiunit neural signals. *IEEE Trans Biomed Eng* 39, 723-729.
- Axmacher, N., Mormann, F., Fernandez, G., Elger, C.E., and Fell, J. (2006). Memory formation by neuronal synchronization. *Brain Res Rev* 52, 170-182.
- Badre, D., and Wagner, A.D. (2007). Left ventrolateral prefrontal cortex and the cognitive control of memory. *Neuropsychologia* 45, 2883-2901.
- Bancaud, J., Brunet-Bourgoin, F., Chauvel, P., and Halgren, E. (1994). Anatomical origin of déjà vu and vivid 'memories' in human temporal lobe epilepsy. *Brain* 117 (Pt 1), 71-90.
- Bankman, I.N., Johnson, K.O., and Schneider, W. (1993). Optimal detection, classification, and superposition resolution in neural waveform recordings. *IEEE Trans Biomed Eng* 40, 836-841.
- Batschelet, E. (1981). Circular statistics in biology (London ; New York: Academic Press).
- Bayley, P.J., and Squire, L.R. (2002). Medial temporal lobe amnesia: Gradual acquisition of factual information by nondeclarative memory. *J Neurosci* 22, 5741-5748.
- Benjamini, Y., and Hochberg, Y. (1995). Controlling the False Discovery Rate - a Practical and Powerful Approach to Multiple Testing. *Journal of the Royal Statistical Society Series B-Methodological* 57, 289-300.
- Berger, T.W., Alger, B., and Thompson, R.F. (1976). Neuronal substrate of classical conditioning in the hippocampus. *Science* 192, 483-485.
- Berry, S.D., and Thompson, R.F. (1978). Prediction of learning rate from the hippocampal electroencephalogram. *Science* 200, 1298-1300.
- Bi, G.Q., and Poo, M.M. (1998). Synaptic modifications in cultured hippocampal neurons: dependence on spike timing, synaptic strength, and postsynaptic cell type. *J Neurosci* 18, 10464-10472.
- Bialek, W., Rieke, F., de Ruyter van Steveninck, R.R., and Warland, D. (1991). Reading a neural code. *Science* 252, 1854-1857.
- Björklund, A., and Dunnett, S.B. (2007). Dopamine neuron systems in the brain: an update. *Trends Neurosci* 30, 194-202.
- Bliss, T.V., and Lomo, T. (1973). Long-lasting potentiation of synaptic transmission in the dentate area of the anaesthetized rabbit following stimulation of the perforant path. *J Physiol* 232, 331-356.

- Boss, B.D., Peterson, G.M., and Cowan, W.M. (1985). On the number of neurons in the dentate gyrus of the rat. *Brain Res* 338, 144-150.
- Botvinick, M., Nystrom, L.E., Fissell, K., Carter, C.S., and Cohen, J.D. (1999). Conflict monitoring versus selection-for-action in anterior cingulate cortex. *Nature* 402, 179-181.
- Brainard, D.H. (1997). The Psychophysics Toolbox. *Spatial Vision* 10, 433-436.
- Bremaud, P. (2002). Mathematical Principles of Signal Processing. Fourier and Wavelet Analysis. (Springer).
- Britten, K.H., Newsome, W.T., Shadlen, M.N., Celebrini, S., and Movshon, J.A. (1996). A relationship between behavioral choice and the visual responses of neurons in macaque MT. *Vis Neurosci* 13, 87-100.
- Britten, K.H., Shadlen, M.N., Newsome, W.T., and Movshon, J.A. (1993). Responses of neurons in macaque MT to stochastic motion signals. *Vis Neurosci* 10, 1157-1169.
- Brown, J.W., and Braver, T.S. (2005). Learned predictions of error likelihood in the anterior cingulate cortex. *Science* 307, 1118-1121.
- Brown, M.W., and Aggleton, J.P. (2001). Recognition memory: what are the roles of the perirhinal cortex and hippocampus? *Nat Rev Neurosci* 2, 51-61.
- Buhl, E.H., Otis, T.S., and Mody, I. (1996). Zinc-induced collapse of augmented inhibition by GABA in a temporal lobe epilepsy model. *Science* 271, 369-373.
- Bullock, T.H. (1997). Signals and signs in the nervous system: the dynamic anatomy of electrical activity is probably information-rich. *Proc Natl Acad Sci U S A* 94, 1-6.
- Bunzeck, N., and Duzel, E. (2006). Absolute coding of stimulus novelty in the human substantia nigra/VTA. *Neuron* 51, 369-379.
- Bush, G., Whalen, P.J., Rosen, B.R., Jenike, M.A., McInerney, S.C., and Rauch, S.L. (1998). The counting Stroop: an interference task specialized for functional neuroimaging--validation study with functional MRI. *Hum Brain Mapp* 6, 270-282.
- Butts, D.A., Weng, C., Jin, J., Yeh, C.I., Lesica, N.A., Alonso, J.M., and Stanley, G.B. (2007). Temporal precision in the neural code and the timescales of natural vision. *Nature* 449, 92-95.
- Buzsaki, G. (1998). Memory consolidation during sleep: a neurophysiological perspective. *J Sleep Res* 7 Suppl 1, 17-23.
- Buzsaki, G. (2004). Large-scale recording of neuronal ensembles. *Nat Neurosci* 7, 446-451.
- Buzsáki, G. (2006). Rhythms of the brain (Oxford: Oxford University Press).

- Buzsaki, G., and Eidelberg, E. (1982). Direct afferent excitation and long-term potentiation of hippocampal interneurons. *J Neurophysiol* 48, 597-607.
- Buzsaki, G., Leung, L.W., and Vanderwolf, C.H. (1983). Cellular bases of hippocampal EEG in the behaving rat. *Brain Res* 287, 139-171.
- Cameron, K.A., Yashar, S., Wilson, C.L., and Fried, I. (2001). Human hippocampal neurons predict how well word pairs will be remembered. *Neuron* 30, 289-298.
- Caplan, J.B., Madsen, J.R., Schulze-Bonhage, A., Aschenbrenner-Scheibe, R., Newman, E.L., and Kahana, M.J. (2003). Human theta oscillations related to sensorimotor integration and spatial learning. *J Neurosci* 23, 4726-4736.
- Caporale, N., and Dan, Y. (2008). Spike Timing-Dependent Plasticity: A Hebbian Learning Rule. *Annu Rev Neurosci*.
- Carmena, J.M., Lebedev, M.A., Crist, R.E., O'Doherty, J.E., Santucci, D.M., Dimitrov, D.F., Patil, P.G., Henriquez, C.S., and Nicolelis, M.A. (2003). Learning to control a brain-machine interface for reaching and grasping by primates. *PLoS Biol* 1, E42.
- Carter, C.S., Braver, T.S., Barch, D.M., Botvinick, M.M., Noll, D., and Cohen, J.D. (1998). Anterior cingulate cortex, error detection, and the online monitoring of performance. *Science* 280, 747-749.
- Casey, B.J., Trainor, R.J., Orendi, J.L., Schubert, A.B., Nystrom, L.E., Giedd, J.N., Castellanos, F.X., Huxley, J.V., Noll, D.C., Cohen, J.D., *et al.* (1997). A developmental functional MRI study of prefrontal activation during performance of a Go-No-Go task. *Journal of Cognitive Neuroscience* 9, 835-847.
- Chandra, R., and Optican, L.M. (1997). Detection, classification, and superposition resolution of action potentials in multiunit single-channel recordings by an on-line real-time neural network. *IEEE Trans Biomed Eng* 44, 403-412.
- Chang, B.S., and Lowenstein, D.H. (2003). Epilepsy. *N Engl J Med* 349, 1257-1266.
- Chapin, J.K. (2004). Using multi-neuron population recordings for neural prosthetics. *Nature Neuroscience* 7, 452-455.
- Chapman, L.F., Walter, R.D., Markham, C.H., Rand, R.W., and Crandall, P.H. (1967). Memory changes induced by stimulation of hippocampus or amygdala in epilepsy patients with implanted electrodes. *Trans Am Neurol Assoc* 92, 50-56.
- Chapman, P.F., Kairiss, E.W., Keenan, C.L., and Brown, T.H. (1990). Long-Term Synaptic Potentiation in the Amygdala. *Synapse* 6, 271-278.
- Chawla, M.K., Guzowski, J.F., Ramirez-Amaya, V., Lipa, P., Hoffman, K.L., Marriott, L.K., Worley, P.F., McNaughton, B.L., and Barnes, C.A. (2005). Sparse, environmentally selective expression of Arc RNA in the upper blade of the rodent fascia dentata by brief spatial experience. *Hippocampus* 15, 579-586.

- Chen, Z., Ito, K., Fujii, S., Miura, M., Furuse, H., Sasaki, H., Kaneko, K., Kato, H., and Miyakawa, H. (1996). Roles of dopamine receptors in long-term depression: enhancement via D1 receptors and inhibition via D2 receptors. *Receptors Channels* *4*, 1-8.
- Cheng, S., and Frank, L.M. (2008). New experiences enhance coordinated neural activity in the hippocampus. *Neuron* *57*, 303-313.
- Clayton, N.S., Griffiths, D.P., Emery, N.J., and Dickinson, A. (2001). Elements of episodic-like memory in animals. *Philos Trans R Soc Lond B Biol Sci* *356*, 1483-1491.
- Cohen, J.E. (1995). Unexpected dominance of high frequencies in chaotic nonlinear population models. *Nature* *378*, 610-612.
- Colom, L.V., Christie, B.R., and Bland, B.H. (1988). Cingulate cell discharge patterns related to hippocampal EEG and their modulation by muscarinic and nicotinic agents. *Brain Res* *460*, 329-338.
- Corkin, S. (2002). What's new with the amnesic patient H.M.? *Nat Rev Neurosci* *3*, 153-160.
- Covolan, L., Ribeiro, L.T., Longo, B.M., and Mello, L.E. (2000). Cell damage and neurogenesis in the dentate granule cell layer of adult rats after pilocarpine- or kainate-induced status epilepticus. *Hippocampus* *10*, 169-180.
- Creutzfeldt, O., Ojemann, G., and Lettich, E. (1989a). Neuronal activity in the human lateral temporal lobe. I. Responses to speech. *Exp Brain Res* *77*, 451-475.
- Creutzfeldt, O., Ojemann, G., and Lettich, E. (1989b). Neuronal activity in the human lateral temporal lobe. II. Responses to the subjects own voice. *Exp Brain Res* *77*, 476-489.
- Crutchley, H.D., Mathias, C.J., and Dolan, R.J. (2001). Neural activity in the human brain relating to uncertainty and arousal during anticipation. *Neuron* *29*, 537-545.
- Csicsvari, J., Hirase, H., Czurko, A., and Buzsaki, G. (1998). Reliability and state dependence of pyramidal cell-interneuron synapses in the hippocampus: an ensemble approach in the behaving rat. *Neuron* *21*, 179-189.
- Csicsvari, J., Hirase, H., Czurko, A., Mamiya, A., and Buzsaki, G. (1999). Oscillatory coupling of hippocampal pyramidal cells and interneurons in the behaving Rat. *J Neurosci* *19*, 274-287.
- Davis, C.D., Jones, F.L., and Derrick, B.E. (2004). Novel environments enhance the induction and maintenance of long-term potentiation in the dentate gyrus. *J Neurosci* *24*, 6497-6506.
- Davis, H.P., and Squire, L.R. (1984). Protein synthesis and memory: a review. *Psychol Bull* *96*, 518-559.
- Dayan, P., and Abbott, L.F. (2001). Theoretical Neuroscience. Computational and Mathematical Modeling of Neural Systems (MIT Press).

- Diba, K., and Buzsaki, G. (2007). Forward and reverse hippocampal place-cell sequences during ripples. *Nat Neurosci* 10, 1241-1242.
- Doclo, S., and Moonen, M. (2002). GSVD-based optimal filtering for single and multimicrophone speech enhancement. *IEEE Transactions on Signal Processing* 50, 2230-2244.
- Donaldson, W. (1996). The role of decision processes in remembering and knowing. *Memory & Cognition* 24, 523-533.
- Duvernoy, H.M. (2005). *The Human Hippocampus* (Springer).
- Efron, B., and Tibshirani, R.J. (1993). *An Introduction to the Bootstrap* (London: Chapman&Hall).
- Einhauser, W., Rutishauser, U., and Koch, C. (2008). Task-demands can immediately reverse the effects of sensory-driven saliency in complex visual stimuli. *J Vis* 8, 2 1-19.
- Ekstrom, A., Viskontas, I., Kahana, M., Jacobs, J., Upchurch, K., Bookheimer, S., and Fried, I. (2007). Contrasting roles of neural firing rate and local field potentials in human memory. *Hippocampus* 17, 606-617.
- Eldridge, L.L., Knowlton, B.J., Furmanski, C.S., Bookheimer, S.Y., and Engel, S.A. (2000). Remembering episodes: a selective role for the hippocampus during retrieval. *Nat Neurosci* 3, 1149-1152.
- Engel, A.K., Moll, C.K., Fried, I., and Ojemann, G.A. (2005). Invasive recordings from the human brain: clinical insights and beyond. *Nat Rev Neurosci* 6, 35-47.
- Engel, A.K., and Singer, W. (2001). Temporal binding and the neural correlates of sensory awareness. *Trends Cogn Sci* 5, 16-25.
- Engel, J., Jr. (2001). Mesial temporal lobe epilepsy: what have we learned? *Neuroscientist* 7, 340-352.
- Ennaceur, A., and Delacour, J. (1988). A new one-trial test for neurobiological studies of memory in rats. 1: Behavioral data. *Behav Brain Res* 31, 47-59.
- Evgeniou, T., Pontil, M., and Poggio, T. (2000). Regularization networks and support vector machines. *Advances in Computational Mathematics* 13, 1-50.
- Fahy, F.L., Riches, I.P., and Brown, M.W. (1993). Neuronal activity related to visual recognition memory: long-term memory and the encoding of recency and familiarity information in the primate anterior and medial inferior temporal and rhinal cortex. *Exp Brain Res* 96, 457-472.
- Fallon, J.H., Koziell, D.A., and Moore, R.Y. (1978). Catecholamine innervation of the basal forebrain. II. Amygdala, suprarhinal cortex and entorhinal cortex. *J Comp Neurol* 180, 509-532.
- Fanselow, M.S., and LeDoux, J.E. (1999). Why we think plasticity underlying pavlovian fear conditioning occurs in the basolateral amygdala. *Neuron* 23, 229-232.

- Fantz, R.L. (1964). Visual Experience in Infants - Decreased Attention to Familiar Patterns Relative to Novel Ones. *Science 146*, 668-670.
- Fee, M.S., Mitra, P.P., and Kleinfeld, D. (1996a). Automatic sorting of multiple unit neuronal signals in the presence of anisotropic and non-Gaussian variability. *J Neurosci Methods 69*, 175-188.
- Fee, M.S., Mitra, P.P., and Kleinfeld, D. (1996b). Variability of extracellular spike waveforms of cortical neurons. *J Neurophysiol 76*, 3823-3833.
- Felleman, D.J., and Van Essen, D.C. (1991). Distributed hierarchical processing in the primate cerebral cortex. *Cereb Cortex 1*, 1-47.
- Fellows, L.K., and Farah, M.J. (2005). Is anterior cingulate cortex necessary for cognitive control? *Brain 128*, 788-796.
- Fenton, A.A., and Muller, R.U. (1998). Place cell discharge is extremely variable during individual passes of the rat through the firing field. *Proc Natl Acad Sci U S A 95*, 3182-3187.
- Fernandez, G., Effern, A., Grunwald, T., Pezer, N., Lehnertz, K., Dumpelmann, M., Roost, D.V., and Elger, C.E. (1999). Real-Time Tracking of Memory Formation in the Human Rhinal Cortex and Hippocampus. *Science 285*, 1582-1585.
- Fisher, N.I. (1993). Statistical analysis of circular data (Cambridge [England] ; New York, NY, USA: Cambridge University Press).
- Fletcher, P.C., Shallice, T., and Dolan, R.J. (1998). The functional roles of prefrontal cortex in episodic memory - I. Encoding. *Brain 121*, 1239-1248.
- Flexner, J.B., Flexner, L.B., and Stellar, E. (1963). Memory in Mice as Affected by Intracerebral Puromycin. *Science 141*, 57-&.
- Fonseca, R., Nagerl, U.V., and Bonhoeffer, T. (2006). Neuronal activity determines the protein synthesis dependence of long-term potentiation. *Nat Neurosci 9*, 478-480.
- Foster, D.J., and Wilson, M.A. (2006). Reverse replay of behavioural sequences in hippocampal place cells during the awake state. *Nature 440*, 680-683.
- Fox, S.E. (1989). Membrane potential and impedance changes in hippocampal pyramidal cells during theta rhythm. *Exp Brain Res 77*, 283-294.
- Fox, S.E., and Ranck, J.B., Jr. (1981). Electrophysiological characteristics of hippocampal complex-spike cells and theta cells. *Exp Brain Res 41*, 399-410.
- Frankland, P.W., and Bontempi, B. (2005). The organization of recent and remote memories. *Nat Rev Neurosci 6*, 119-130.

- Frankland, P.W., Bontempi, B., Talton, L.E., Kaczmarek, L., and Silva, A.J. (2004). The involvement of the anterior cingulate cortex in remote contextual fear memory. *Science* *304*, 881-883.
- Franklin, J., and Bair, W. (1995). The Effect of a Refractory Period on the Power Spectrum of Neuronal Discharge. *Siam Journal on Applied Mathematics* *55*, 1074-1093.
- Frey, U., Schroeder, H., and Matthies, H. (1990). Dopaminergic antagonists prevent long-term maintenance of posttetanic LTP in the CA1 region of rat hippocampal slices. *Brain Res* *522*, 69-75.
- Fried, I., Cameron, K.A., Yashar, S., Fong, R., and Morrow, J.W. (2002). Inhibitory and excitatory responses of single neurons in the human medial temporal lobe during recognition of faces and objects. *Cereb Cortex* *12*, 575-584.
- Fried, I., MacDonald, K.A., and Wilson, C.L. (1997). Single neuron activity in human hippocampus and amygdala during recognition of faces and objects. *Neuron* *18*, 753-765.
- Fried, I., Wilson, C.L., Maidment, N.T., Engel, J., Behnke, E., Fields, T.A., MacDonald, K.A., Morrow, J.W., and Ackerson, L. (1999). Cerebral microdialysis combined with single-neuron and electroencephalographic recording in neurosurgical patients - Technical note. *Journal of Neurosurgery* *91*, 697-705.
- Fried, I., Wilson, C.L., Morrow, J.W., Cameron, K.A., Behnke, E.D., Ackerson, L.C., and Maidment, N.T. (2001). Increased dopamine release in the human amygdala during performance of cognitive tasks. *Nat Neurosci* *4*, 201-206.
- Gabbiani, F., and Koch, C. (1999). Principles of Spike Train Analysis. In *Methods in Neuronal Modeling: From Synapses to Networks*, C. Koch, and I. Segev, eds. (MIT Press), pp. 313-360.
- Gabriel, M., Kubota, Y., Sparenborg, S., Straube, K., and Vogt, B.A. (1991). Effects of cingulate cortical lesions on avoidance learning and training-induced unit activity in rabbits. *Exp Brain Res* *86*, 585-600.
- Gabriel, M., Sparenborg, S.P., and Stolar, N. (1987). Hippocampal control of cingulate cortical and anterior thalamic information processing during learning in rabbits. *Exp Brain Res* *67*, 131-152.
- Gallant, J.L., Connor, C.E., Rakshit, S., Lewis, J.W., and Van Essen, D.C. (1996). Neural responses to polar, hyperbolic, and Cartesian gratings in area V4 of the macaque monkey. *J Neurophysiol* *76*, 2718-2739.
- Gallant, J.L., Shoup, R.E., and Mazer, J.A. (2000). A human extrastriate area functionally homologous to macaque V4. *Neuron* *27*, 227-235.
- Gallo, M., and Candido, A. (1995). Reversible inactivation of dorsal hippocampus by tetrodotoxin impairs blocking of taste aversion selectively during the acquisition but not the retrieval in rats. *Neurosci Lett* *186*, 1-4.
- Garcia, A.D., Doan, N.B., Imura, T., Bush, T.G., and Sofroniew, M.V. (2004). GFAP-expressing progenitors are the principal source of constitutive neurogenesis in adult mouse forebrain. *Nat Neurosci* *7*, 1233-1241.

- Gasbarri, A., Sulli, A., and Packard, M.G. (1997). The dopaminergic mesencephalic projections to the hippocampal formation in the rat. *Prog Neuropsychopharmacol Biol Psychiatry* *21*, 1-22.
- Gasbarri, A., Verney, C., Innocenzi, R., Campana, E., and Pacitti, C. (1994). Mesolimbic dopaminergic neurons innervating the hippocampal formation in the rat: a combined retrograde tracing and immunohistochemical study. *Brain Res* *668*, 71-79.
- Gaspar, P., Berger, B., Febvret, A., Vigny, A., and Henry, J.P. (1989). Catecholamine Innervation of the Human Cerebral-Cortex as Revealed by Comparative Immunohistochemistry of Tyrosine-Hydroxylase and Dopamine-Beta-Hydroxylase. *Journal of Comparative Neurology* *279*, 249-271.
- Gilbert, P.E., Kesner, R.P., and Lee, I. (2001). Dissociating hippocampal subregions: double dissociation between dentate gyrus and CA1. *Hippocampus* *11*, 626-636.
- Gleissner, U., Helmstaedter, C., Kurthen, M., and Elger, C.E. (1997). Evidence of very fast memory consolidation: an intracarotid amytal study. *Neuroreport* *8*, 2893-2896.
- Gold, C. (2007). Biophysics of extracellular action potentials. (California Institute of Technology).
- Gold, C., Henze, D.A., Koch, C., and Buzsaki, G. (2006). On the origin of the extracellular action potential waveform: A modeling study. *J Neurophysiol* *95*, 3113-3128.
- Gould, E., Reeves, A.J., Graziano, M.S., and Gross, C.G. (1999). Neurogenesis in the neocortex of adult primates. *Science* *286*, 548-552.
- Green, D., and Swets, J. (1966). Signal Detection Theory and Psychophysics (Wiley).
- Grunwald, T., Lehnertz, K., Heinze, H.J., Helmstaedter, C., and Elger, C.E. (1998). Verbal novelty detection within the human hippocampus proper. *Proc Natl Acad Sci U S A* *95*, 3193-3197.
- Halgren, E., Babb, T.L., and Crandall, P.H. (1978a). Activity of human hippocampal formation and amygdala neurons during memory testing. *Electroencephalogr Clin Neurophysiol* *45*, 585-601.
- Halgren, E., Walter, R.D., Cherlow, D.G., and Crandall, P.H. (1978b). Mental phenomena evoked by electrical stimulation of the human hippocampal formation and amygdala. *Brain* *101*, 83-117.
- Halgren, E., and Wilson, C.L. (1985). Recall deficits produced by afterdischarges in the human hippocampal formation and amygdala. *Electroencephalogr Clin Neurophysiol* *61*, 375-380.
- Halgren, E., Wilson, C.L., and Stapleton, J.M. (1985). Human medial temporal-lobe stimulation disrupts both formation and retrieval of recent memories. *Brain Cogn* *4*, 287-295.
- Hampton, R.R. (2001). Rhesus monkeys know when they remember. *Proc Natl Acad Sci USA* *98*, 5359-5362.

- Han, C.J., O'Tuathaigh, C.M., van Trigt, L., Quinn, J.J., Fanselow, M.S., Mongeau, R., Koch, C., and Anderson, D.J. (2003). Trace but not delay fear conditioning requires attention and the anterior cingulate cortex. *Proc Natl Acad Sci U S A* *100*, 13087-13092.
- Hanes, D.P., and Schall, J.D. (1996). Neural control of voluntary movement initiation. *Science* *274*, 427-430.
- Hansen, P.C. (1998). Rank-deficient prewhitening with quotient SVD and ULV decompositions. *Bit* *38*, 34-43.
- Harris, K.D., Henze, D.A., Csicsvari, J., Hirase, H., and Buzsaki, G. (2000). Accuracy of tetrode spike separation as determined by simultaneous intracellular and extracellular measurements. *J Neurophysiol* *84*, 401-414.
- Hasselmo, M.E., Schnell, E., and Barkai, E. (1995). Dynamics of learning and recall at excitatory recurrent synapses and cholinergic modulation in rat hippocampal region CA3. *J Neurosci* *15*, 5249-5262.
- Hebb, D.O. (1949). *The Organization of Behavior; A Neuropsychological Theory*. (Wiley).
- Heit, G., Smith, M.E., and Halgren, E. (1988). Neural encoding of individual words and faces by the human hippocampus and amygdala. *Nature* *333*, 773-775.
- Heit, G., Smith, M.E., and Halgren, E. (1990). Neuronal activity in the human medial temporal lobe during recognition memory. *Brain* *113* (*Pt 4*), 1093-1112.
- Henze, D.A., Borhegyi, Z., Csicsvari, J., Mamiya, A., Harris, K.D., and Buzsaki, G. (2000). Intracellular features predicted by extracellular recordings in the hippocampus in vivo. *Journal of Neurophysiology* *84*, 390-400.
- Henze, D.A., Wittner, L., and Buzsaki, G. (2002). Single granule cells reliably discharge targets in the hippocampal CA3 network in vivo. *Nat Neurosci* *5*, 790-795.
- Hess, E.H., and Polt, J.M. (1960). Pupil Size as Related to Interest Value of Visual Stimuli. *Science* *132*, 349-350.
- Heuer, F., and Reisberg, D. (1990). Vivid Memories of Emotional Events - the Accuracy of Remembered Minutiae. *Memory & Cognition* *18*, 496-506.
- Hochberg, L.R., Serruya, M.D., Friehs, G.M., Mukand, J.A., Saleh, M., Caplan, A.H., Branner, A., Chen, D., Penn, R.D., and Donoghue, J.P. (2006). Neuronal ensemble control of prosthetic devices by a human with tetraplegia. *Nature* *442*, 164-171.
- Holmgren, C., Harkany, T., Svensenfors, B., and Zilberter, Y. (2003). Pyramidal cell communication within local networks in layer 2/3 of rat neocortex. *J Physiol* *551*, 139-153.

- Holscher, C., Anwyl, R., and Rowan, M.J. (1997). Stimulation on the positive phase of hippocampal theta rhythm induces long-term potentiation that can be depotentiated by stimulation on the negative phase in area CA1 in vivo. *J Neurosci* 17, 6470-6477.
- Holt, G.R., Softky, W.R., Koch, C., and Douglas, R.J. (1996). Comparison of discharge variability in vitro and in vivo in cat visual cortex neurons. *Journal of Neurophysiology* 75, 1806-1814.
- Honey, R.C., Watt, A., and Good, M. (1998). Hippocampal lesions disrupt an associative mismatch process. *J Neurosci* 18, 2226-2230.
- Hopfield, J.J. (1982). Neural networks and physical systems with emergent collective computational abilities. *Proc Natl Acad Sci U S A* 79, 2554-2558.
- Howard, M.W., Rizzuto, D.S., Caplan, J.B., Madsen, J.R., Lisman, J., Aschenbrenner-Scheibe, R., Schulze-Bonhage, A., and Kahana, M.J. (2003). Gamma oscillations correlate with working memory load in humans. *Cereb Cortex* 13, 1369-1374.
- Huang, Y.Y., and Kandel, E.R. (1995). D1/D5 receptor agonists induce a protein synthesis-dependent late potentiation in the CA1 region of the hippocampus. *Proc Natl Acad Sci U S A* 92, 2446-2450.
- Huang, Y.Y., Nguyen, P.V., Abel, T., and Kandel, E.R. (1996). Long-lasting forms of synaptic potentiation in the mammalian hippocampus. *Learn Mem* 3, 74-85.
- Hung, C.P., Kreiman, G., Poggio, T., and DiCarlo, J.J. (2005). Fast readout of object identity from macaque inferior temporal cortex. *Science* 310, 863-866.
- Hunt, R.R. (1995). The Subtlety of Distinctiveness - What Vonrestorff Really Did. *Psychonomic Bulletin & Review* 2, 105-112.
- Hyman, J.M., Wyble, B.P., Goyal, V., Rossi, C.A., and Hasselmo, M.E. (2003). Stimulation in hippocampal region CA1 in behaving rats yields long-term potentiation when delivered to the peak of theta and long-term depression when delivered to the trough. *J Neurosci* 23, 11725-11731.
- Ito, H.I., and Schuman, E.M. (2007). Frequency-dependent gating of synaptic transmission and plasticity by dopamine. *Front. Neural Circuits* 1.
- Jacobs, J., Kahana, M.J., Ekstrom, A.D., and Fried, I. (2007). Brain oscillations control timing of single-neuron activity in humans. *J Neurosci* 27, 3839-3844.
- Jensen, O., Kaiser, J., and Lachaux, J.P. (2007). Human gamma-frequency oscillations associated with attention and memory. *Trends Neurosci* 30, 317-324.
- Johansson, R.S., and Birznieks, I. (2004). First spikes in ensembles of human tactile afferents code complex spatial fingertip events. *Nat Neurosci* 7, 170-177.

- Johnson, R.A., and Wichern, D.W. (2002). Applied multivariate statistical analysis (New York: Prentice Hall).
- Jolliffe, I.T. (2002). Principal component analysis (New York: Springer).
- Juergens, E., Guettler, A., and Eckhorn, R. (1999). Visual stimulation elicits locked and induced gamma oscillations in monkey intracortical- and EEG-potentials, but not in human EEG. *Exp Brain Res 129*, 247-259.
- Jung, H.H., Kim, C.H., Chang, J.H., Park, Y.G., Chung, S.S., and Chang, J.W. (2006a). Bilateral anterior cingulotomy for refractory obsessive-compulsive disorder: Long-term follow-up results. *Stereotact Funct Neurosurg 84*, 184-189.
- Jung, J., Hudry, J., Ryvlin, P., Royet, J.P., Bertrand, O., and Lachaux, J.P. (2006b). Functional significance of olfactory-induced oscillations in the human amygdala. *Cereb Cortex 16*, 1-8.
- Jung, M.W., and McNaughton, B.L. (1993). Spatial selectivity of unit activity in the hippocampal granular layer. *Hippocampus 3*, 165-182.
- Kalivas, P.W., and Volkow, N.D. (2005). The neural basis of addiction: a pathology of motivation and choice. *Am J Psychiatry 162*, 1403-1413.
- Kanerva, P. (1988). Sparse distributed memory (Cambridge: MIT Press).
- Kang, H., and Schuman, E.M. (1996). A requirement for local protein synthesis in neurotrophin-induced hippocampal synaptic plasticity. *Science 273*, 1402-1406.
- Kang, H.J., and Schuman, E.M. (1995). Neurotrophin-induced modulation of synaptic transmission in the adult hippocampus. *J Physiol Paris 89*, 11-22.
- Kass, R.E., Ventura, V., and Brown, E.N. (2005). Statistical issues in the analysis of neuronal data. *J Neurophysiol 94*, 8-25.
- Kay, S.M. (1993). Fundamentals of statistical signal processing (Englewood Cliffs, N.J.: PTR Prentice-Hall).
- Kelleher, R.J., 3rd, Govindarajan, A., and Tonegawa, S. (2004). Translational regulatory mechanisms in persistent forms of synaptic plasticity. *Neuron 44*, 59-73.
- Kelley, W.M., Miezin, F.M., McDermott, K.B., Buckner, R.L., Raichle, M.E., Cohen, N.J., Ollinger, J.M., Akbudak, E., Conturo, T.E., Snyder, A.Z., and Petersen, S.E. (1998). Hemispheric specialization in human dorsal frontal cortex and medial temporal lobe for verbal and nonverbal memory encoding. *Neuron 20*, 927-936.
- Kennerley, S.W., Walton, M.E., Behrens, T.E., Buckley, M.J., and Rushworth, M.F. (2006). Optimal decision making and the anterior cingulate cortex. *Nat Neurosci 9*, 940-947.

- Kerns, J.G., Cohen, J.D., MacDonald, A.W., 3rd, Cho, R.Y., Stenger, V.A., and Carter, C.S. (2004). Anterior cingulate conflict monitoring and adjustments in control. *Science* *303*, 1023-1026.
- Kim, K.H., and Kim, S.J. (2003). A wavelet-based method for action potential detection from extracellular neural signal recording with low signal-to-noise ratio. *IEEE Trans Biomed Eng* *50*, 999-1011.
- Kinsbourne, M., and George, J. (1974). Mechanism of Word-Frequency Effect on Recognition Memory. *Journal of Verbal Learning and Verbal Behavior* *13*, 63-69.
- Kirwan, C.B., Bayley, P.J., Galvan, V.V., and Squire, L.R. (2008). Detailed recollection of remote autobiographical memory after damage to the medial temporal lobe. *Proc Natl Acad Sci U S A* *105*, 2676-2680.
- Kishiyama, M.M., Yonelinas, A.P., and Lazzara, M.M. (2004). The von Restorff effect in amnesia: the contribution of the hippocampal system to novelty-related memory enhancements. *J Cogn Neurosci* *16*, 15-23.
- Klimesch, W., Doppelmayr, M., Russegger, H., and Pachinger, T. (1996). Theta band power in the human scalp EEG and the encoding of new information. *Neuroreport* *7*, 1235-1240.
- Knight, R. (1996). Contribution of human hippocampal region to novelty detection. *Nature* *383*, 256-259.
- Knight, R.T., and Nakada, T. (1998). Cortico-limbic circuits and novelty: a review of EEG and blood flow data. *Rev Neurosci* *9*, 57-70.
- Knutson, B., Adams, C.M., Fong, G.W., and Hommer, D. (2001). Anticipation of increasing monetary reward selectively recruits nucleus accumbens. *J Neurosci* *21*, RC159.
- Koch, C. (1999). *Biophysics of computation : information processing in single neurons* (New York: Oxford University Press).
- Koechlin, E., and Hyafil, A. (2007). Anterior prefrontal function and the limits of human decision-making. *Science* *318*, 594-598.
- Kohonen, T., and Lehtio, P. (1981). Storage and Processing of Information in Distributed Associative Memory Systems. In *Parallel Models of Associative Memory*, G. Hinton, and J. Anderson, eds. (Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.), pp. 105-143.
- Kraskov, A., Quiroga, R.Q., Reddy, L., Fried, I., and Koch, C. (2007). Local field potentials and spikes in the human medial temporal lobe are selective to image category. *J Cogn Neurosci* *19*, 479-492.
- Kreiman, G. (2007). Single unit approaches to human vision and memory. *Curr Opin Neurobiol* *17*, 471-475.
- Kreiman, G., Fried, I., and Koch, C. (2002). Single-neuron correlates of subjective vision in the human medial temporal lobe. *Proc Natl Acad Sci U S A* *99*, 8378-8383.

- Kreiman, G., Koch, C., and Fried, I. (2000a). Category-specific visual responses of single neurons in the human medial temporal lobe. *Nat Neurosci* 3, 946-953.
- Kreiman, G., Koch, C., and Fried, I. (2000b). Imagery neurons in the human brain. *Nature* 408, 357-361.
- Lamprecht, R., and Dudai, Y. (2000). The amygdala in conditioned taste aversion: it's there, but where. In *The Amygdala*, J.P. Aggleton, ed. (NY: Oxford Press), pp. 311–329.
- Lang, P.J., and Cuthbert, B.N. (1993). International affective picture system standardization procedure and initial group results for affective judgements. (Gainesville, FL, University of Florida).
- Laurent, G. (2002). Olfactory network dynamics and the coding of multidimensional signals. *Nat Rev Neurosci* 3, 884-895.
- Lemaire, V., Aurousseau, C., Le Moal, M., and Abrous, D.N. (1999). Behavioural trait of reactivity to novelty is related to hippocampal neurogenesis. *Eur J Neurosci* 11, 4006-4014.
- Lepage, M., Ghaffar, O., Nyberg, L., and Tulving, E. (2000). Prefrontal cortex and episodic memory retrieval mode. *Proceedings of the National Academy of Sciences of the United States of America* 97, 506-511.
- Leutgeb, J.K., Leutgeb, S., Moser, M.B., and Moser, E.I. (2007). Pattern separation in the dentate gyrus and CA3 of the hippocampus. *Science* 315, 961-966.
- Levine, E.S., Dreyfus, C.F., Black, I.B., and Plummer, M.R. (1995). Brain-derived neurotrophic factor rapidly enhances synaptic transmission in hippocampal neurons via postsynaptic tyrosine kinase receptors. *Proc Natl Acad Sci U S A* 92, 8074-8077.
- Lewicki, M.S. (1998). A review of methods for spike sorting: the detection and classification of neural action potentials. *Network* 9, R53-78.
- Li, L., Miller, E.K., and Desimone, R. (1993). The representation of stimulus familiarity in anterior inferior temporal cortex. *J Neurophysiol* 69, 1918-1929.
- Li, S., Cullen, W.K., Anwyl, R., and Rowan, M.J. (2003). Dopamine-dependent facilitation of LTP induction in hippocampal CA1 by exposure to spatial novelty. *Nat Neurosci* 6, 526-531.
- Lisman, J.E., and Grace, A.A. (2005). The hippocampal-VTA loop: controlling the entry of information into long-term memory. *Neuron* 46, 703-713.
- Lisman, J.E., and Otmakhova, N.A. (2001). Storage, recall, and novelty detection of sequences by the hippocampus: elaborating on the SOCRATIC model to account for normal and aberrant effects of dopamine. *Hippocampus* 11, 551-568.
- Lledo, P.M., Alonso, M., and Grubb, M.S. (2006). Adult neurogenesis and functional plasticity in neuronal circuits. *Nat Rev Neurosci* 7, 179-193.

- Logothetis, N.K. (2002). The neural basis of the blood-oxygen-level-dependent functional magnetic resonance imaging signal. *Philos Trans R Soc Lond B Biol Sci* 357, 1003-1037.
- Logothetis, N.K., Pauls, J., Augath, M., Trinath, T., and Oeltermann, A. (2001). Neurophysiological investigation of the basis of the fMRI signal. *Nature* 412, 150-157.
- Lohof, A.M., Ip, N.Y., and Poo, M.M. (1993). Potentiation of developing neuromuscular synapses by the neurotrophins NT-3 and BDNF. *Nature* 363, 350-353.
- Maass, W., and Markram, H. (2004). On the computational power of circuits of spiking neurons. *Journal of Computer and System Sciences* 69, 593-616.
- Maass, W., Natschlager, T., and Markram, H. (2002). Real-time computing without stable states: a new framework for neural computation based on perturbations. *Neural Comput* 14, 2531-2560.
- MacDonald, A.W., 3rd, Cohen, J.D., Stenger, V.A., and Carter, C.S. (2000). Dissociating the role of the dorsolateral prefrontal and anterior cingulate cortex in cognitive control. *Science* 288, 1835-1838.
- MacKay, D., and McCulloch, W. (1952). The limiting information capacity of a neuronal link. *Bulletin of Mathematical Biology* 14, 127-135.
- MacLeod, K., Backer, A., and Laurent, G. (1998). Who reads temporal information contained across synchronized and oscillatory spike trains? *Nature* 395, 693-698.
- Macmillan, N.A., and Creelman, C.D. (2005). *Detection theory*, 2nd edn (Mahwah, NJ: Lawrence Associates).
- Mandler, G. (1980). Recognizing - the Judgment of Previous Occurrence. *Psychological Review* 87, 252-271.
- Mamns, J.R., Hopkins, R.O., Reed, J.M., Kitchener, E.G., and Squire, L.R. (2003). Recognition memory and the human hippocampus. *Neuron* 37, 171-180.
- Markram, H., Lubke, J., Frotscher, M., and Sakmann, B. (1997). Regulation of synaptic efficacy by coincidence of postsynaptic APs and EPSPs. *Science* 275, 213-215.
- Marr, D. (1970). A Theory for Cerebral Neocortex. *Proceedings of the Royal Society of London Series B-Biological Sciences* 176, 161-234.
- Marr, D. (1971). Simple memory: a theory for archicortex. *Philos Trans R Soc Lond B Biol Sci* 262, 23-81.
- Martin, S.J., Grimwood, P.D., and Morris, R.G. (2000). Synaptic plasticity and memory: an evaluation of the hypothesis. *Annu Rev Neurosci* 23, 649-711.
- Mazurek, M.E., and Shadlen, M.N. (2002). Limits to the temporal fidelity of cortical spike rate signals. *Nat Neurosci* 5, 463-471.

- McCarthy, G., Wood, C.C., Williamson, P.D., and Spencer, D.D. (1989). Task-dependent field potentials in human hippocampal formation. *J Neurosci* 9, 4253-4268.
- McCartney, H., Johnson, A.D., Weil, Z.M., and Givens, B. (2004). Theta reset produces optimal conditions for long-term potentiation. *Hippocampus* 14, 684-687.
- McCormick, D.A., Connors, B.W., Lighthall, J.W., and Prince, D.A. (1985). Comparative electrophysiology of pyramidal and sparsely spiny stellate neurons of the neocortex. *J Neurophysiol* 54, 782-806.
- McGaugh, J.L., Introinocollison, I.B., Nagahara, A.H., Cahill, L., Brioni, J.D., and Castellano, C. (1990). Involvement of the Amygdaloid Complex in Neuromodulatory Influences on Memory Storage. *Neuroscience and Biobehavioral Reviews* 14, 425-431.
- McHugh, T.J., Jones, M.W., Quinn, J.J., Balthasar, N., Coppari, R., Elmquist, J.K., Lowell, B.B., Fanselow, M.S., Wilson, M.A., and Tonegawa, S. (2007). Dentate gyrus NMDA receptors mediate rapid pattern separation in the hippocampal network. *Science* 317, 94-99.
- Messinger, A., Squire, L.R., Zola, S.M., and Albright, T.D. (2005). Neural correlates of knowledge: stable representation of stimulus associations across variations in behavioral performance. *Neuron* 48, 359-371.
- Milner, B., Corkin, S., and Teuber, H.L. (1968). Further Analysis of Hippocampal Amnesic Syndrome - 14-Year Follow-up Study of HM. *Neuropsychologia* 6, 215-234.
- Mitchell, J.F., Sundberg, K.A., and Reynolds, J.H. (2007). Differential attention-dependent response modulation across cell classes in macaque visual area V4. *Neuron* 55, 131-141.
- Mitzdorf, U. (1985). Current source-density method and application in cat cerebral cortex: investigation of evoked potentials and EEG phenomena. *Physiol Rev* 65, 37-100.
- Montemurro, M.A., Panzeri, S., Maravall, M., Alenda, A., Bale, M.R., Brambilla, M., and Petersen, R.S. (2007). Role of precise spike timing in coding of dynamic vibrissa stimuli in somatosensory thalamus. *J Neurophysiol* 98, 1871-1882.
- Mormann, F., Fell, J., Axmacher, N., Weber, B., Lehnhertz, K., Elger, C.E., and Fernandez, G. (2005). Phase/amplitude reset and theta-gamma interaction in the human medial temporal lobe during a continuous word recognition memory task. *Hippocampus* 15, 890-900.
- Musallam, S., Corneil, B.D., Greger, B., Scherberger, H., and Andersen, R.A. (2004). Cognitive control signals for neural prosthetics. *Science* 305, 258-262.
- Mussa-Ivaldi, F.A., and Miller, L.E. (2003). Brain-machine interfaces: computational demands and clinical needs meet basic neuroscience. *Trends Neurosci* 26, 329-334.
- Najmi, A.H., and Sadowsky, J. (1997). The continuous wavelet transform and variable resolution time-frequency analysis. *Johns Hopkins Apl Technical Digest* 18, 134-140.

- Nakazawa, K., Quirk, M.C., Chitwood, R.A., Watanabe, M., Yeckel, M.F., Sun, L.D., Kato, A., Carr, C.A., Johnston, D., Wilson, M.A., and Tonegawa, S. (2002). Requirement for hippocampal CA3 NMDA receptors in associative memory recall. *Science* 297, 211-218.
- Nakazawa, K., Sun, L.D., Quirk, M.C., Rondi-Reig, L., Wilson, M.A., and Tonegawa, S. (2003). Hippocampal CA3 NMDA receptors are crucial for memory acquisition of one-time experience. *Neuron* 38, 305-315.
- Neuman, R.S., and Harley, C.W. (1983). Long-lasting potentiation of the dentate gyrus population spike by norepinephrine. *Brain Res* 273, 162-165.
- Neves, G., Cooke, S.F., and Bliss, T.V.P. (2008). Synaptic plasticity, memory and the hippocampus: a neural network approach to causality. *Nature Reviews Neuroscience* 9, 65-75.
- Nicolelis, M.A., Ghazanfar, A.A., Faggin, B.M., Votaw, S., and Oliveira, L.M. (1997). Reconstructing the engram: simultaneous, multisite, many single neuron recordings. *Neuron* 18, 529-537.
- Nimchinsky, E.A., Gilissen, E., Allman, J.M., Perl, D.P., Erwin, J.M., and Hof, P.R. (1999). A neuronal morphologic type unique to humans and great apes. *Proc Natl Acad Sci U S A* 96, 5268-5273.
- Nir, Y., Fisch, L., Mukamel, R., Gelbard-Sagiv, H., Arieli, A., Fried, I., and Malach, R. (2007). Coupling between neuronal firing rate, gamma LFP, and BOLD fMRI is related to interneuronal correlations. *Curr Biol* 17, 1275-1285.
- Noton, D., and Stark, L. (1971). Scanpaths in eye movements during pattern perception. *Science* 171, 308-311.
- O'Doherty, J.P., Dayan, P., Friston, K., Critchley, H., and Dolan, R.J. (2003). Temporal difference models and reward-related learning in the human brain. *Neuron* 38, 329-337.
- O'Reilly, R.C., and McClelland, J.L. (1994). Hippocampal conjunctive encoding, storage, and recall: avoiding a trade-off. *Hippocampus* 4, 661-682.
- Ojemann, G., and Fedio, P. (1968). Effect of stimulation of the human thalamus and parietal and temporal white matter on short-term memory. *J Neurosurg* 29, 51-59.
- Ojemann, G.A. (1997). Treatment of temporal lobe epilepsy. *Annu Rev Med* 48, 317-328.
- Ojemann, G.A., Creutzfeldt, O., Lettich, E., and Haglund, M.M. (1988). Neuronal activity in human lateral temporal cortex related to short-term verbal memory, naming and reading. *Brain* 111 (Pt 6), 1383-1403.
- Ojemann, G.A., and Dodrill, C.B. (1985). Verbal memory deficits after left temporal lobectomy for epilepsy. Mechanism and intraoperative prediction. *J Neurosurg* 62, 101-107.
- Ojemann, G.A., Schoenfield-McNeill, J., and Corina, D.P. (2002). Anatomic subdivisions in human temporal cortical neuronal activity related to recent verbal memory. *Nat Neurosci* 5, 64-71.

- Orr, G., Rao, G., Houston, F.P., McNaughton, B.L., and Barnes, C.A. (2001). Hippocampal synaptic plasticity is modulated by theta rhythm in the fascia dentata of adult and aged freely behaving rats. *Hippocampus 11*, 647-654.
- Osipova, D., Takashima, A., Oostenveld, R., Fernandez, G., Maris, E., and Jensen, O. (2006). Theta and gamma oscillations predict encoding and retrieval of declarative memory. *J Neurosci 26*, 7523-7531.
- Otmakhova, N.A., and Lisman, J.E. (1996). D1/D5 dopamine receptor activation increases the magnitude of early long-term potentiation at CA1 hippocampal synapses. *J Neurosci 16*, 7478-7486.
- Otten, L.J., Henson, R.N., and Rugg, M.D. (2002). State-related and item-related neural correlates of successful memory encoding. *Nat Neurosci 5*, 1339-1344.
- Otten, L.J., Quayle, A.H., Akram, S., Ditewig, T.A., and Rugg, M.D. (2006). Brain activity before an event predicts later recollection. *Nat Neurosci 9*, 489-491.
- Oya, H., Kawasaki, H., Howard, M.A., and Adolphs, R. (2002). Electrophysiological responses in the human amygdala discriminate emotion categories of complex visual stimuli. *Journal of Neuroscience 22*, 9502-9512.
- Paller, K.A., Kutas, M., and Mayes, A.R. (1987). Neural correlates of encoding in an incidental learning paradigm. *Electroencephalogr Clin Neurophysiol 67*, 360-371.
- Paller, K.A., and Wagner, A.D. (2002). Observing the transformation of experience into memory. *Trends in Cognitive Sciences 6*, 93-102.
- Parent, J.M. (2007). Adult neurogenesis in the intact and epileptic dentate gyrus. *Dentate Gyrus: A Comprehensive Guide to Structure, Function, and Clinical Implications 163*, 529-+.
- Parent, J.M., Yu, T.W., Leibowitz, R.T., Geschwind, D.H., Sloviter, R.S., and Lowenstein, D.H. (1997). Dentate granule cell neurogenesis is increased by seizures and contributes to aberrant network reorganization in the adult rat hippocampus. *J Neurosci 17*, 3727-3738.
- Parker, A., Wilding, E., and Akerman, C. (1998). The von Restorff effect in visual object recognition memory in humans and monkeys: The role of frontal/perirhinal interaction. *Journal of Cognitive Neuroscience 10*, 691-703.
- Paus, T. (2001). Primate anterior cingulate cortex: where motor control, drive and cognition interface. *Nat Rev Neurosci 2*, 417-424.
- Paus, T., Koski, L., Caramanos, Z., and Westbury, C. (1998). Regional differences in the effects of task difficulty and motor output on blood flow response in the human anterior cingulate cortex: a review of 107 PET activation studies. *Neuroreport 9*, R37-47.
- Pavlides, C., Greenstein, Y.J., Grudman, M., and Winson, J. (1988). Long-term potentiation in the dentate gyrus is induced preferentially on the positive phase of theta-rhythm. *Brain Res 439*, 383-387.

- Pavlov, L.P. (1927). Conditioned Reflexes. An Investigation of the Physiological Activity of the Cerebral Cortex. (Toronto: Oxford University Press).
- Pelli, D.G. (1997). The VideoToolbox software for visual psychophysics: Transforming numbers into movies. *Spatial Vision 10*, 437-442.
- Penfield, W. (1958). Functional localization in temporal and deep sylvian areas. *Res Publ Assoc Res Nerv Ment Dis 36*, 210-226.
- Penfield, W., and Perot, P. (1963). The Brain's Record of Auditory and Visual Experience. a Final Summary and Discussion. *Brain 86*, 595-696.
- Penttonen, M., and Buzsaki, G. (2003). Natural logarithmic relationship between brain oscillators. *Thalamus & Related Systems 2*, 145-152.
- Perrine, K., Devinsky, O., Uysal, S., Luciano, D.J., and Dogali, M. (1994). Left temporal neocortex mediation of verbal memory: evidence from functional mapping with cortical stimulation. *Neurology 44*, 1845-1850.
- Phelps, E.A. (2004). Human emotion and memory: interactions of the amygdala and hippocampal complex. *Current Opinion in Neurobiology 14*, 198-202.
- Phelps, E.A., LaBar, K.S., and Spencer, D.D. (1997). Memory for emotional words following unilateral temporal lobectomy. *Brain and Cognition 35*, 85-109.
- Pouget, A., Dayan, P., and Zemel, R.S. (2003). Inference and computation with population codes. *Annu Rev Neurosci 26*, 381-410.
- Pouzat, C., Delescluse, M., Viot, P., and Diebolt, J. (2004). Improved spike-sorting by modeling firing statistics and burst-dependent spike amplitude attenuation: a Markov chain Monte Carlo approach. *J Neurophysiol 91*, 2910-2928.
- Pouzat, C., Mazor, O., and Laurent, G. (2002). Using noise signature to optimize spike-sorting and to assess neuronal classification quality. *Journal of Neuroscience Methods 122*, 43-57.
- Prinz, A.A., Abbott, L.F., and Marder, E. (2004). The dynamic clamp comes of age. *Trends Neurosci 27*, 218-224.
- Quirk, M.C., and Wilson, M.A. (1999). Interaction between spike waveform classification and temporal sequence detection. *J Neurosci Methods 94*, 41-52.
- Quiroga, R.Q., Nadasdy, Z., and Ben-Shaul, Y. (2004). Unsupervised spike detection and sorting with wavelets and superparamagnetic clustering. *Neural Computation 16*, 1661-1687.
- Quiroga, R.Q., Reddy, L., Koch, C., and Fried, I. (2007). Decoding visual inputs from multiple neurons in the human temporal lobe. *J Neurophysiol 98*, 1997-2007.

- Quiroga, R.Q., Reddy, L., Kreiman, G., Koch, C., and Fried, I. (2005). Invariant visual representation by single neurons in the human brain. *Nature* *435*, 1102-1107.
- Rainer, G., and Miller, E.K. (2000). Effects of visual experience on the representation of objects in the prefrontal cortex. *Neuron* *27*, 179-189.
- Ratcliff, R., Gronlund, S.D., and Sheu, C.F. (1992). Testing Global Memory Models Using Roc Curves. *Psychological Review* *99*, 518-535.
- Reddy, L., Quiroga, R.Q., Wilken, P., Koch, C., and Fried, I. (2006). A single-neuron correlate of change detection and change blindness in the human medial temporal lobe. *Curr Biol* *16*, 2066-2072.
- Redish, A.D. (2003). MClust-3.3 (software).
- Rempel-Clower, N.L., Zola, S.M., Squire, L.R., and Amaral, D.G. (1996). Three cases of enduring memory impairment after bilateral damage limited to the hippocampal formation. *J Neurosci* *16*, 5233-5255.
- Richardson, M.P., Strange, B.A., and Dolan, R.J. (2004). Encoding of emotional memories depends on amygdala and hippocampus and their interactions. *Nature Neuroscience* *7*, 278-285.
- Riches, I.P., Wilson, F.A., and Brown, M.W. (1991). The effects of visual stimulation and memory on neurons of the hippocampal formation and the neighboring parahippocampal gyrus and inferior temporal cortex of the primate. *J Neurosci* *11*, 1763-1779.
- Rieke, F. (1997). Spikes: exploring the neural code (Cambridge: MIT Press).
- Rifkin, R., Yeo, G., and Poggio, T. (2003). Regularized Least Squares Classification. In Advances in Learning Theory: Methods, Model and Applications, J.A.K. Suykens, ed. (Amsterdam: IOS Press), pp. 131-146.
- Rinberg, D., Bialek, W., Davidowitz, H., and Tishby, N. (2003). Spike sorting in the frequency domain with overlap detection. In ArXiv Physics e-prints, p. 0306056.
- Ringo, J.L. (1995). Brevity of processing in a mnemonic task. *J Neurophysiol* *73*, 1712-1715.
- Rizzuto, D.S., Madsen, J.R., Bromfield, E.B., Schulze-Bonhage, A., and Kahana, M.J. (2006). Human neocortical oscillations exhibit theta phase differences between encoding and retrieval. *Neuroimage* *31*, 1352-1358.
- Rizzuto, D.S., Madsen, J.R., Bromfield, E.B., Schulze-Bonhage, A., Seelig, D., Aschenbrenner-Scheibe, R., and Kahana, M.J. (2003). Reset of human neocortical oscillations during a working memory task. *Proc Natl Acad Sci U S A* *100*, 7931-7936.
- Rizzuto, D.S., Mamelak, A.N., Sutherling, W.W., Fineman, I., and Andersen, R.A. (2005). Spatial selectivity in human ventrolateral prefrontal cortex. *Nat Neurosci* *8*, 415-417.

- Robinson, T.E. (1980). Hippocampal rhythmic slow activity (RSA; theta): a critical analysis of selected studies and discussion of possible species-differences. *Brain Res* *203*, 69-101.
- Rogan, M.T., Staubli, U.V., and LeDoux, J.E. (1997). Fear conditioning induces associative long-term potentiation in the amygdala. *Nature* *390*, 604-607.
- Rohani, P., Miramontes, O., and Keeling, M.J. (2004). The colour of noise in short ecological time series data. *Math Med Biol* *21*, 63-72.
- Rolls, E.T. (1996). A theory of hippocampal function in memory. *Hippocampus* *6*, 601-620.
- Rolls, E.T. (1999). Spatial view cells and the representation of place in the primate hippocampus. *Hippocampus* *9*, 467-480.
- Rolls, E.T. (2007). An attractor network in the hippocampus: theory and neurophysiology. *Learn Mem* *14*, 714-731.
- Rolls, E.T., Cahusac, P.M., Feigenbaum, J.D., and Miyashita, Y. (1993). Responses of single neurons in the hippocampus of the macaque related to recognition memory. *Exp Brain Res* *93*, 299-306.
- Romo, R., Brody, C.D., Hernandez, A., and Lemus, L. (1999). Neuronal correlates of parametric working memory in the prefrontal cortex. *Nature* *399*, 470-473.
- Rugg, M.D., Mark, R.E., Walla, P., Schloerscheidt, A.M., Birch, C.S., and Allan, K. (1998). Dissociation of the neural correlates of implicit and explicit memory. *Nature* *392*, 595-598.
- Rutishauser, U., and Koch, C. (2007). Probabilistic modeling of eye movement data during conjunction search via feature-based attention. *Journal of Vision* *7*, 5.
- Rutishauser, U., Mamelak, A.N., and Schuman, E.M. (2006a). Single-trial learning of novel stimuli by individual neurons of the human hippocampus-amygdala complex. *Neuron* *49*, 805-813.
- Rutishauser, U., Schuman, E.M., and Mamelak, A.N. (2006b). Online detection and sorting of extracellularly recorded action potentials in human medial temporal lobe recordings, *in vivo*. *J Neurosci Methods* *154*, 204-224.
- Rutishauser, U., Schuman, E.M., and Mamelak, A.N. (2008). Activity of human hippocampal and amygdala neurons during retrieval of declarative memories. *Proc Natl Acad Sci U S A* *105*, 329-334.
- Sahani, S., Pezaris, J.S., and Andersen, R.A. (1998). On the Separation of Signals from Neighboring Cells in Tetrode Recordings. In *Advances in Neural Information Processing Systems 10*, J.I. Jordan, M.J. Kearns, and S.A. Solla, eds. (MIT Press), pp. 222-228.
- Sakai, K., and Miyashita, Y. (1991). Neural organization for the long-term memory of paired associates. *Nature* *354*, 152-155.

- Schacter, D.L., and Dodson, C.S. (2001). Misattribution, false recognition and the sins of memory. *Philos Trans R Soc Lond B* *356*, 1385-1393.
- Schacter, D.L., Reiman, E., Curran, T., Yun, L.S., Bandy, D., McDermott, K.B., and Roediger, H.L. (1996). Neuroanatomical correlates of veridical and illusory recognition memory: Evidence from positron emission tomography. *Neuron* *17*, 267-274.
- Schmidt-Hieber, C., Jonas, P., and Bischofberger, J. (2004). Enhanced synaptic plasticity in newly generated granule cells of the adult hippocampus. *Nature* *429*, 184-187.
- Schultz, W. (2000). Multiple reward signals in the brain. *Nat Rev Neurosci* *1*, 199-207.
- Schultz, W. (2002). Getting formal with dopamine and reward. *Neuron* *36*, 241-263.
- Schultz, W., and Dickinson, A. (2000). Neuronal coding of prediction errors. *Annu Rev Neurosci* *23*, 473-500.
- Schuman, E.M. (1999). mRNA trafficking and local protein synthesis at the synapse. *Neuron* *23*, 645-648.
- Schwartz, A.B. (2004). Cortical neural prosthetics. *Annu Rev Neurosci* *27*, 487-507.
- Scoville, W.B., and Milner, B. (1957). Loss of Recent Memory after Bilateral Hippocampal Lesions. *Journal of Neurology Neurosurgery and Psychiatry* *20*, 11-21.
- Sederberg, P.B., Kahana, M.J., Howard, M.W., Donner, E.J., and Madsen, J.R. (2003). Theta and gamma oscillations during encoding predict subsequent recall. *J Neurosci* *23*, 10809-10814.
- Sederberg, P.B., Schulze-Bonhage, A., Madsen, J.R., Bromfield, E.B., McCarthy, D.C., Brandt, A., Tully, M.S., and Kahana, M.J. (2007). Hippocampal and neocortical gamma oscillations predict memory formation in humans. *Cerebral Cortex* *17*, 1190-1196.
- Serruya, M.D., Hatsopoulos, N.G., Paninski, L., Fellows, M.R., and Donoghue, J.P. (2002). Instant neural control of a movement signal. *Nature* *416*, 141-142.
- Seung, H.S., and Sompolinsky, H. (1993). Simple models for reading neuronal population codes. *Proc Natl Acad Sci U S A* *90*, 10749-10753.
- Seymour, B., O'Doherty, J.P., Dayan, P., Koltzenburg, M., Jones, A.K., Dolan, R.J., Friston, K.J., and Frackowiak, R.S. (2004). Temporal difference models describe higher-order learning in humans. *Nature* *429*, 664-667.
- Shadlen, M.N., and Newsome, W.T. (1998). The variable discharge of cortical neurons: implications for connectivity, computation, and information coding. *J Neurosci* *18*, 3870-3896.
- Shapiro, M.L., and Olton, D.S. (1994). Hippocampal function and interference. In *Memory Systems*, D.L. Schacter, and E. Tulving, eds. (London: MIT Press), pp. 141-146.

- Sharot, T., Delgado, M.R., and Phelps, E.A. (2004). How emotion enhances the feeling of remembering. *Nature Neuroscience* 7, 1376-1380.
- Shidara, M., and Richmond, B.J. (2002). Anterior cingulate: single neuronal signals related to degree of reward expectancy. *Science* 296, 1709-1711.
- Shima, K., and Tanji, J. (1998). Role for cingulate motor area cells in voluntary movement selection based on reward. *Science* 282, 1335-1338.
- Shoham, S., Fellows, M.R., and Normann, R.A. (2003). Robust, automatic spike sorting using mixtures of multivariate t-distributions. *J Neurosci Methods* 127, 111-122.
- Shors, T.J., and Matzel, L.D. (1997). Long-term potentiation: what's learning got to do with it? *Behav Brain Sci* 20, 597-614.
- Siapas, A.G., Lubenov, E.V., and Wilson, M.A. (2005). Prefrontal phase locking to hippocampal theta oscillations. *Neuron* 46, 141-151.
- Smith, C.N., Hopkins, R.O., and Squire, L.R. (2006). Experience-dependent eye movements, awareness, and hippocampus-dependent memory. *Journal of Neuroscience* 26, 11304-11312.
- Smith, M.E., Stapleton, J.M., and Halgren, E. (1986). Human medial temporal lobe potentials evoked in memory and language tasks. *Electroencephalogr Clin Neurophysiol* 63, 145-159.
- Smith, W.B., Starck, S.R., Roberts, R.W., and Schuman, E.M. (2005). Dopaminergic stimulation of local protein synthesis enhances surface expression of GluR1 and synaptic transmission in hippocampal neurons. *Neuron* 45, 765-779.
- Softky, W.R., and Koch, C. (1993). The highly irregular firing of cortical cells is inconsistent with temporal integration of random EPSPs. *J Neurosci* 13, 334-350.
- Sokolov, E.N. (1963). Higher nervous functions; the orienting reflex. *Annu Rev Physiol* 25, 545-580.
- Sompolinsky, H., Yoon, H., Kang, K.J., and Shamir, M. (2001). Population coding in neuronal systems with correlated noise. *Physical Review E* 6405, -.
- Spencer, S.S., Sperling, M.R., Shewmon, D.A., and Kahane, P. (2007). Intracranial electrodes. In *Epilepsy. A comprehensive Textbook.*, J. Engel, Jr., and T.A. Pedley, eds. (Lippincott), pp. 1791-1815.
- Squire, L.R. (1992). Memory and the hippocampus: a synthesis from findings with rats, monkeys, and humans. *Psychol Rev* 99, 195-231.
- Squire, L.R., and Alvarez, P. (1995). Retrograde amnesia and memory consolidation: a neurobiological perspective. *Curr Opin Neurobiol* 5, 169-177.
- Squire, L.R., and Bayley, P.J. (2007). The neuroscience of remote memory. *Curr Opin Neurobiol* 17, 185-196.

- Squire, L.R., Stark, C.E., and Clark, R.E. (2004). The medial temporal lobe. *Annu Rev Neurosci* 27, 279-306.
- Squire, L.R., and Zola-Morgan, S. (1991). The medial temporal lobe memory system. *Science* 253, 1380-1386.
- Standing, L., Conezio, J., and Haber, R.N. (1970). Perception and Memory for Pictures - Single-Trial Learning of 2500 Visual Stimuli. *Psychonomic Science* 19, 73-74.
- Stark, C.E., and Squire, L.R. (2000). Functional magnetic resonance imaging (fMRI) activity in the hippocampal region during recognition memory. *J Neurosci* 20, 7776-7781.
- Stark, C.E.L., Bayley, P.J., and Squire, L.R. (2002). Recognition memory for single items and for associations is similarly impaired following damage to the hippocampal region. *Learn Mem* 9, 238-242.
- Stark, C.E.L., and Squire, L.R. (2001). When zero is not zero: The problem of ambiguous baseline conditions in fMRI. *Proceedings of the National Academy of Sciences of the United States of America* 98, 12760-12765.
- Steinlein, O.K. (2004). Genetic mechanisms that underlie epilepsy. *Nature Reviews Neuroscience* 5, 400-408.
- Steriade, M., McCormick, D.A., and Sejnowski, T.J. (1993). Thalamocortical oscillations in the sleeping and aroused brain. *Science* 262, 679-685.
- Stern, C.E., Corkin, S., Gonzalez, R.G., Guimaraes, A.R., Baker, J.R., Jennings, P.J., Carr, C.A., Sugiura, R.M., Vedantham, V., and Rosen, B.R. (1996). The hippocampal formation participates in novel picture encoding: evidence from functional magnetic resonance imaging. *Proc Natl Acad Sci U S A* 93, 8660-8665.
- Stevens, C.F. (1998). A million dollar question: does LTP = memory? *Neuron* 20, 1-2.
- Stopfer, M., Bhagavan, S., Smith, B.H., and Laurent, G. (1997). Impaired odour discrimination on desynchronization of odour-encoding neural assemblies. *Nature* 390, 70-74.
- Stuss, D.T., Floden, D., Alexander, M.P., Levine, B., and Katz, D. (2001). Stroop performance in focal lesion patients: dissociation of processes and frontal lobe lesion location. *Neuropsychologia* 39, 771-786.
- Summerfield, C., Greene, M., Wager, T., Egner, T., Hirsch, J., and Mangels, J. (2006). Neocortical connectivity during episodic memory formation. *PLoS Biol* 4, e128.
- Sutton, M.A., and Schuman, E.M. (2006). Dendritic protein synthesis, synaptic plasticity, and memory. *Cell* 127, 49-58.
- Sutton, R.S., and Barto, A.G. (1998). Reinforcement learning : an introduction (Cambridge, Mass.: MIT Press).
- Sutton, S., Braren, M., Zubin, J., and John, E.R. (1965). Evoked-potential correlates of stimulus uncertainty. *Science* 150, 1187-1188.

- Suzuki, W.A., and Amaral, D.G. (2004). Functional neuroanatomy of the medial temporal lobe memory system. *Cortex* 40, 220-222.
- Takahashi, S., Anzai, Y., and Sakurai, Y. (2003). Automatic sorting for multi-neuronal activity recorded with tetrodes in the presence of overlapping spikes. *J Neurophysiol* 89, 2245-2258.
- Takashima, A., Jensen, O., Oostenveld, R., Maris, E., van de Coevering, M., and Fernandez, G. (2006). Successful declarative memory formation is associated with ongoing activity during encoding in a distributed neocortical network related to working memory: a magnetoencephalography study. *Neuroscience* 139, 291-297.
- Tallon-Baudry, C., and Bertrand, O. (1999). Oscillatory gamma activity in humans and its role in object representation. *Trends Cogn Sci* 3, 151-162.
- Tallon-Baudry, C., Bertrand, O., Henaff, M.A., Isnard, J., and Fischer, C. (2005). Attention modulates gamma-band oscillations differently in the human lateral occipital cortex and fusiform gyrus. *Cereb Cortex* 15, 654-662.
- Teolis, A. (1998). Computational Signal Processing with Wavelets (Birkhaeuser).
- Tomko, G.J., and Crapper, D.R. (1974). Neuronal variability: non-stationary responses to identical visual stimuli. *Brain Res* 79, 405-418.
- Torrence, C., and Compo, G.P. (1998). A practical guide to wavelet analysis. *Bulletin of the American Meteorological Society* 79, 61-78.
- Treves, A., and Rolls, E.T. (1994). Computational analysis of the role of the hippocampus in memory. *Hippocampus* 4, 374-391.
- Tulving, E., Markowitsch, H.J., Craik, F.E., Habib, R., and Houle, S. (1996). Novelty and familiarity activations in PET studies of memory encoding and retrieval. *Cereb Cortex* 6, 71-79.
- Uylings, H.B.M., Groenewegen, H.J., and Kolb, B. (2003). Do rats have a prefrontal cortex? *Behavioural Brain Research* 146, 3-17.
- van Praag, H., Kempermann, G., and Gage, F.H. (1999). Running increases cell proliferation and neurogenesis in the adult mouse dentate gyrus. *Nature Neuroscience* 2, 266-270.
- van Praag, H., Schinder, A.F., Christie, B.R., Toni, N., Palmer, T.D., and Gage, F.H. (2002). Functional neurogenesis in the adult hippocampus. *Nature* 415, 1030-1034.
- Vendrell, P., Junque, C., Pujol, J., Jurado, M.A., Molet, J., and Grafman, J. (1995). The Role of Prefrontal Regions in the Stroop Task. *Neuropsychologia* 33, 341-352.
- Verzeano, M., Crandall, P.H., and Dymond, A. (1971). Neuronal Activity of Amygdala in Patients with Psychomotor Epilepsy. *Neuropsychologia* 9, 331-344.

- Vinogradova, O.S. (2001). Hippocampus as comparator: role of the two input and two output systems of the hippocampus in selection and registration of information. *Hippocampus 11*, 578-598.
- Viskontas, I.V., Ekstrom, A.D., Wilson, C.L., and Fried, I. (2007). Characterizing interneuron and pyramidal cells in the human medial temporal lobe *in vivo* using extracellular recordings. *Hippocampus 17*, 49-57.
- Viskontas, I.V., Knowlton, B.J., Steinmetz, P.N., and Fried, I. (2006). Differences in mnemonic processing by neurons in the human hippocampus and parahippocampal regions. *Journal of Cognitive Neuroscience 18*, 1654-1662.
- Vives, K., Lee, G., Doyle, W., and Spencer, D.D. (2007). Anterior Temporal Resection. In *Epilepsy. A comprehensive Textbook.*, J. Engel, Jr., and T.A. Pedley, eds. (Lippincott), pp. 1859-1867.
- Vogt, B.A., Nimchinsky, E.A., Vogt, L.J., and Hof, P.R. (1995). Human cingulate cortex: surface features, flat maps, and cytoarchitecture. *J Comp Neurol 359*, 490-506.
- von Restorff, H. (1933). Über die Wirkung von Bereichsbildungen im Spurenfeld. *Psychologische Forschung 18*, 299-342.
- Wagner, A.D., Pare-Blagoev, E.J., Clark, J., and Poldrack, R.A. (2001). Recovering meaning: Left prefrontal cortex guides controlled semantic retrieval. *Neuron 31*, 329-338.
- Wais, P.E., Wixted, J.T., Hopkins, R.O., and Squire, L.R. (2006). The hippocampus supports both the recollection and the familiarity components of recognition memory. *Neuron 49*, 459-466.
- Wallace, R.H., Wang, D.W., Singh, R., Scheffer, I.E., George, A.L., Jr., Phillips, H.A., Saar, K., Reis, A., Johnson, E.W., Sutherland, G.R., et al. (1998). Febrile seizures and generalized epilepsy associated with a mutation in the Na⁺-channel beta1 subunit gene SCN1B. *Nat Genet 19*, 366-370.
- Wallace, W.P. (1965). Review of the Historical, Empirical, and Theoretical Status of the Von Restorff Phenomenon. *Psychological Bulletin 63*, 410-424.
- Wang, C., Ulbert, I., Schomer, D.L., Marinkovic, K., and Halgren, E. (2005). Responses of human anterior cingulate cortex microdomains to error detection, conflict monitoring, stimulus-response mapping, familiarity, and orienting. *J Neurosci 25*, 604-613.
- Wang, X.J. (2001). Synaptic reverberation underlying mnemonic persistent activity. *Trends Neurosci 24*, 455-463.
- Ward, A.A., and Thomas, L.B. (1955). The Electrical Activity of Single Units in the Cerebral Cortex of Man. *Electroencephalography and Clinical Neurophysiology 7*, 135-136.
- Waydo, S., Kraskov, A., Quijan Quiroga, R., Fried, I., and Koch, C. (2006). Sparse representation in the human medial temporal lobe. *J Neurosci 26*, 10232-10234.

- Weisbard, C., and Graham, F.K. (1971). Heart-Rate Change as a Component of Orienting Response in Monkeys. *Journal of Comparative and Physiological Psychology* 76, 74-83.
- Welzl, H., D'Adamo, P., and Lipp, H.P. (2001). Conditioned taste aversion as a learning and memory paradigm. *Behav Brain Res* 125, 205-213.
- West, M.J., and Slomianka, L. (1998). Total number of neurons in the layers of the human entorhinal cortex. *Hippocampus* 8, 69-82.
- Whitlock, J.R., Heynen, A.J., Shuler, M.G., and Bear, M.F. (2006). Learning induces long-term potentiation in the hippocampus. *Science* 313, 1093-1097.
- Wilensky, A.E., Schafe, G.E., Kristensen, M.P., and LeDoux, J.E. (2006). Rethinking the fear circuit: The central nucleus of the amygdala is required for the acquisition, consolidation, and expression of pavlovian fear conditioning. *Journal of Neuroscience* 26, 12387-12396.
- Williams, S., and Johnston, D. (1988). Muscarinic depression of long-term potentiation in CA3 hippocampal neurons. *Science* 242, 84-87.
- Williams, S.M., and Goldman-Rakic, P.S. (1998). Widespread origin of the primate mesofrontal dopamine system. *Cereb Cortex* 8, 321-345.
- Williams, Z.M., Bush, G., Rauch, S.L., Cosgrove, G.R., and Eskandar, E.N. (2004). Human anterior cingulate neurons and the integration of monetary reward with motor responses. *Nat Neurosci* 7, 1370-1375.
- Wilson, C.L. (2004). Intracranial electrophysiological investigation of the human brain in patients with epilepsy: contributions to basic and clinical research. *Exp Neurol* 187, 240-245.
- Wilson, F.A., and Rolls, E.T. (1993). The effects of stimulus novelty and familiarity on neuronal activity in the amygdala of monkeys performing recognition memory tasks. *Exp Brain Res* 93, 367-382.
- Wilson, M.A., and McNaughton, B.L. (1994). Reactivation of hippocampal ensemble memories during sleep. *Science* 265, 676-679.
- Wiltgen, B.J., Brown, R.A., Talton, L.E., and Silva, A.J. (2004). New circuits for old memories: the role of the neocortex in consolidation. *Neuron* 44, 101-108.
- Wirth, S., Yanike, M., Frank, L.M., Smith, A.C., Brown, E.N., and Suzuki, W.A. (2003). Single neurons in the monkey hippocampus and learning of new associations. *Science* 300, 1578-1581.
- Witter, M.P. (1993). Organization of the entorhinal-hippocampal system: a review of current anatomical data. *Hippocampus* 3 Spec No, 33-44.
- Wittmann, B.C., Schott, B.H., Guderian, S., Frey, J.U., Heinze, H.J., and Duzel, E. (2005). Reward-related fMRI activation of dopaminergic midbrain is associated with enhanced hippocampus-dependent long-term memory formation. *Neuron* 45, 459-467.

- Wixted, J.T. (2007). Dual-process theory and signal-detection theory of recognition memory. *Psychol Rev 114*, 152-176.
- Wyble, B.P., Linster, C., and Hasselmo, M.E. (2000). Size of CA1-evoked synaptic potentials is related to theta rhythm phase in rat hippocampus. *J Neurophysiol 83*, 2138-2144.
- Xiang, J.Z., and Brown, M.W. (1998). Differential neuronal encoding of novelty, familiarity and recency in regions of the anterior temporal lobe. *Neuropharmacology 37*, 657-676.
- Yamaguchi, S., Hale, L.A., D'Esposito, M., and Knight, R.T. (2004). Rapid prefrontal-hippocampal habituation to novel events. *J Neurosci 24*, 5356-5363.
- Yanike, M., Wirth, S., and Suzuki, W.A. (2004). Representation of well-learned information in the monkey hippocampus. *Neuron 42*, 477-487.
- Yarbus, A.L. (1967). Eye movements and vision (New York: Plenum).
- Yonelinas, A.P. (2001). Components of episodic memory: the contribution of recollection and familiarity. *Philos Trans R Soc Lond B 356*, 1363-1374.
- Yonelinas, A.P., Kroll, N.E., Quamme, J.R., Lazzara, M.M., Sauve, M.J., Widaman, K.F., and Knight, R.T. (2002). Effects of extensive temporal lobe damage or mild hypoxia on recollection and familiarity. *Nat Neurosci 5*, 1236-1241.
- Yonelinas, A.P., Otten, L.J., Shaw, K.N., and Rugg, M.D. (2005). Separating the Brain Regions Involved in Recollection and Familiarity in Recognition Memory. *J Neurosci 25*, 3002-3008.
- Zohary, E., Shadlen, M.N., and Newsome, W.T. (1994). Correlated neuronal discharge rate and its implications for psychophysical performance. *Nature 370*, 140-143.