

Classic Papers in Neuroscience, Fall 2017:
Selected classic papers about basic concepts in neuroscience

Robert Shapley, Professor CNS

Syllabus

September 5—Introduction—what is a classic paper? -- and strategies for the course

September 12, 19

Hodgkin AL, Huxley AF (1952). A quantitative description of membrane current and its application to conductance and excitation in nerve. *J Physiol* 117:500-544

September 26

Del Castillo J, Katz B (1954) Quantal components of the end-plate potential. *J Physiol* 124:560-573.

October 3

Neher E, Sakmann B (1976) Single-channel currents recorded from membrane of denervated frog muscle fibres. *Nature* 260:799-802.

Sigworth FJ, Neher E (1980) Single Na⁺ channel currents observed in cultured rat muscle cells *Nature* 287:447-449

October 10

Quiz 1

Bliss TVP, 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 (London)* 232:331-356.

October 17

Liao D, Hessler NA, Malinow R. (1995) Activation of postsynaptically silent synapses during pairing-induced LTP in CA1 region of hippocampal slice. *Nature*. 1375:400-4.

October 24

O'Keefe J, Dostrovsky J (1971). The hippocampus as a spatial map. Preliminary evidence from unit activity in the freely-moving rat. *Brain Res* 34:171-175.

Scoville WB, Milner B (1957) Loss of recent memory after bilateral hippocampal lesions. *J Neurol Neurosurg Psychiat* 20:11-21.

October 31

Turrigiano GG, Leslie KR, Desai NS, Rutherford LC, Nelson SB. (1998) Activity-dependent

scaling of quantal amplitude in neocortical neurons. *Nature* 391:892-6.

November 7

Quiz 2

Fesenko EE, Kolesnikov SS, Lyubarsky AL (1985) Induction by cyclic GMP of cationic conductance in plasma membrane of retinal rod outer segment. *Nature*. 313:310-3.

November 14

Hartline HK, Ratliff F (1958) Spatial summation of inhibitory influences in the eye of *Limulus*, and the mutual interaction of receptor units. *J Gen Physiol*. 41:1049-66.

November 21

Hartline HK (1940) The receptive fields of optic nerve fibres. *Amer. J. Physiol*. 130: 690-99

Enroth-Cugell C, Robson J (1966). The contrast sensitivity of retinal ganglion cells of the cat *J Physiology* 187:517–552

November 28—no course meeting

December 5

Georgopoulos AP, Schwartz AB, Kettner RE (1986). Neuronal population coding of movement direction. *Science* 233:1416-1419.

December 19---final exam

Grades: Assessment of grades will be based on student presentations of the papers, on two midterm quizzes, and on a final exam of short essays that will review the entire course.

Time and Location: Tuesday, 2:00-4:00, Meyer 815.