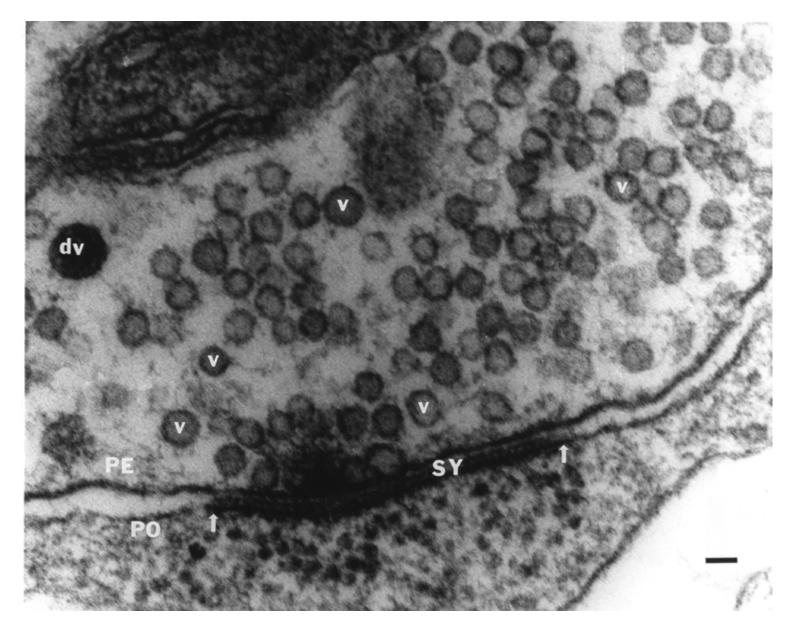
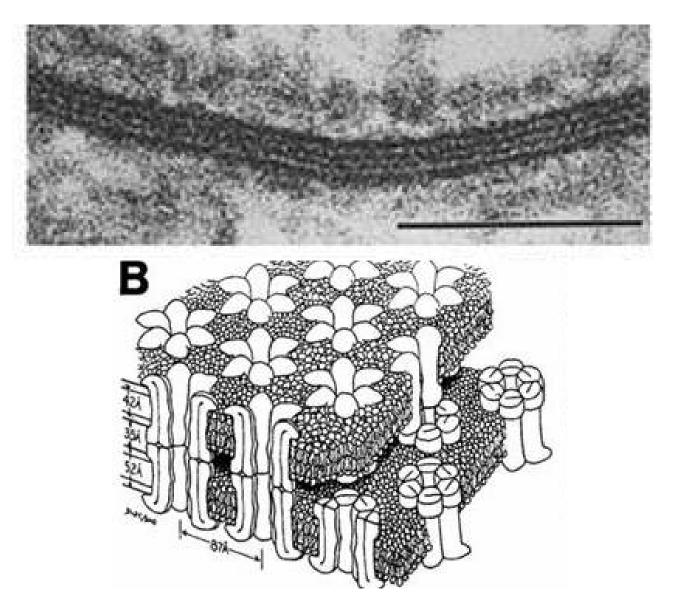
A chemical synapse, by EM



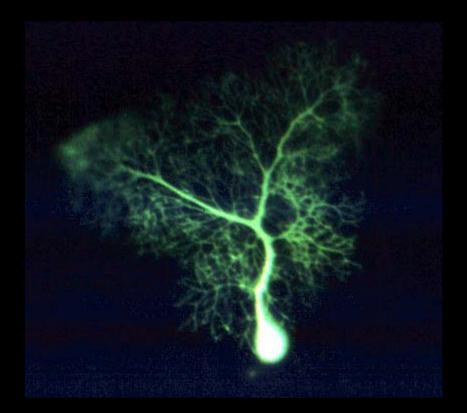
http://web.as.uky.edu/Biology/faculty/cooper/CooperRes2.htm

An electrical synapse, by EM



http://electroneubio.secyt.gov.ar/Bennett-neurons'electrical_synchronization.htm

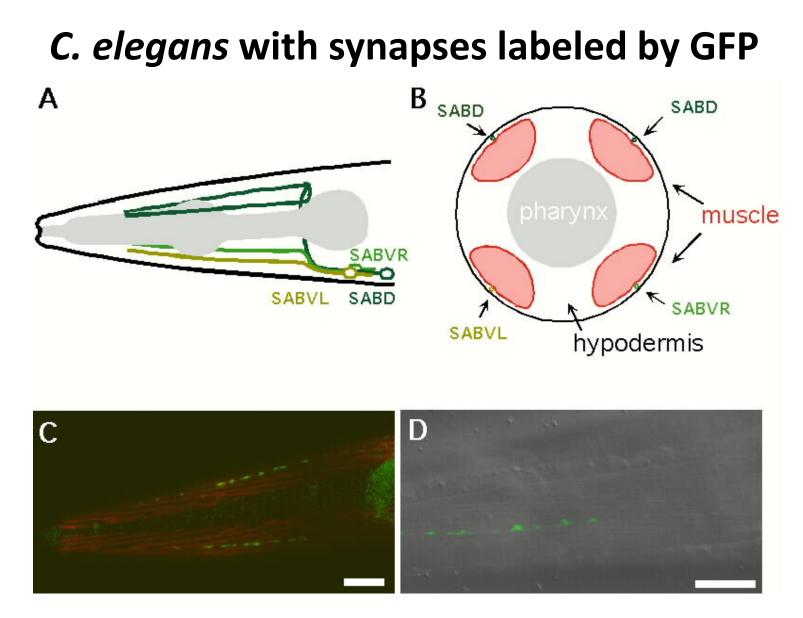
Purkinje neuron filled with fluorescent dye and viewed with a light microscope



http://education.med.nyu.edu/courses/brainandbehavior/courseware/neurohist/html/0101.html

Drosophila larva with GFP expressed in a subset of sensory neurons

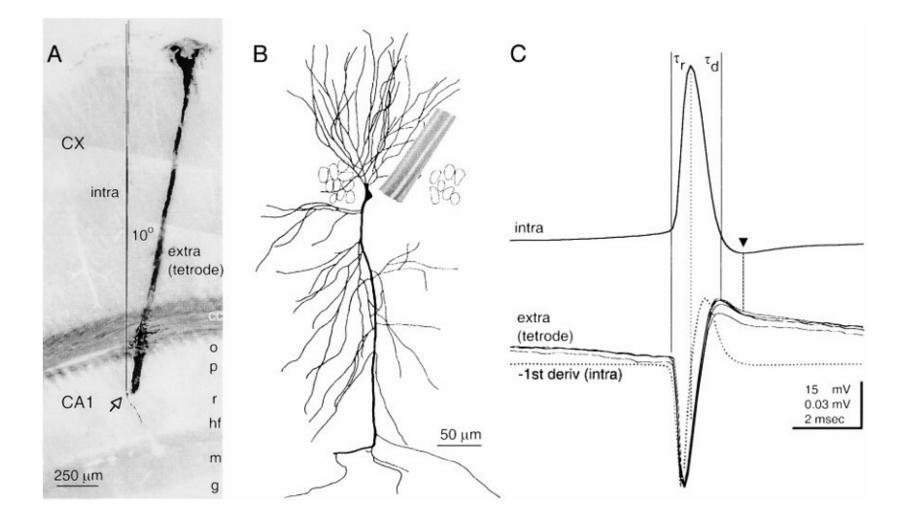
http://www.nig.ac.jp/section/emoto/emoto-e.html



Neuromuscular junctions labeled by tagging a synaptic protein with GFP

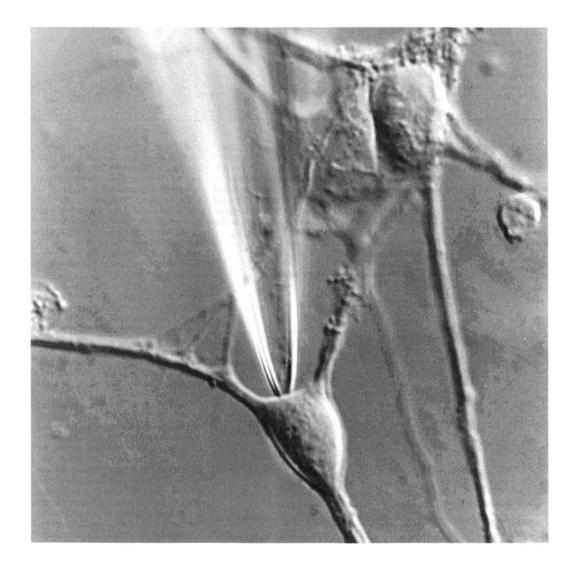
http://thalamus.wustl.edu/nonetlab/ResearchF/elegans.html

Simultaneous intracellular and extracellular recording!



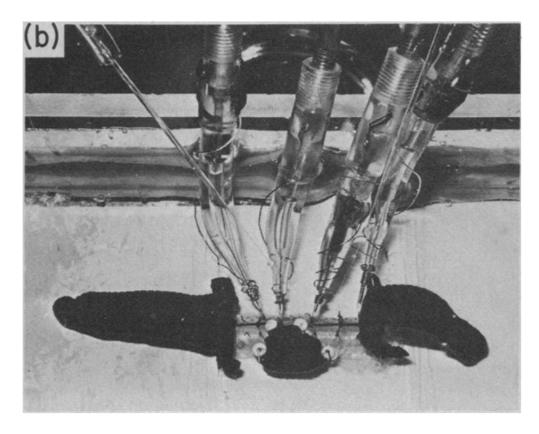
Henze et al. (J Neurophyiol, 2000)

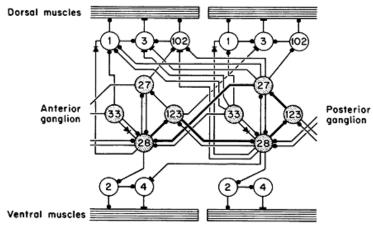
Patch-clamp recording



Neher (*Sci Am*, 1992)

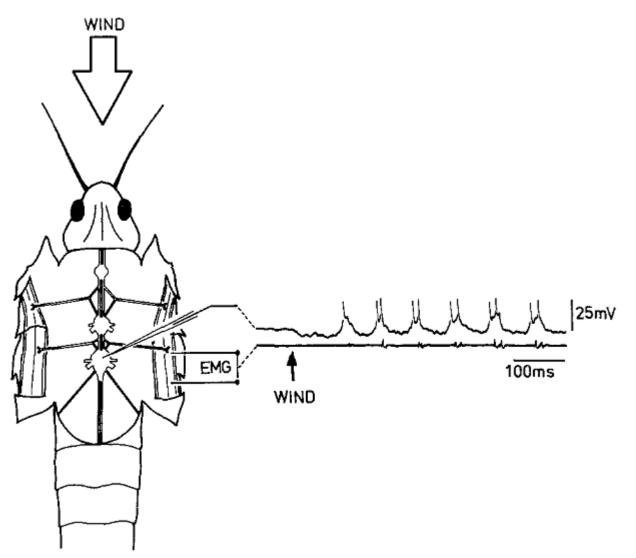
"Semi-intact" preparation



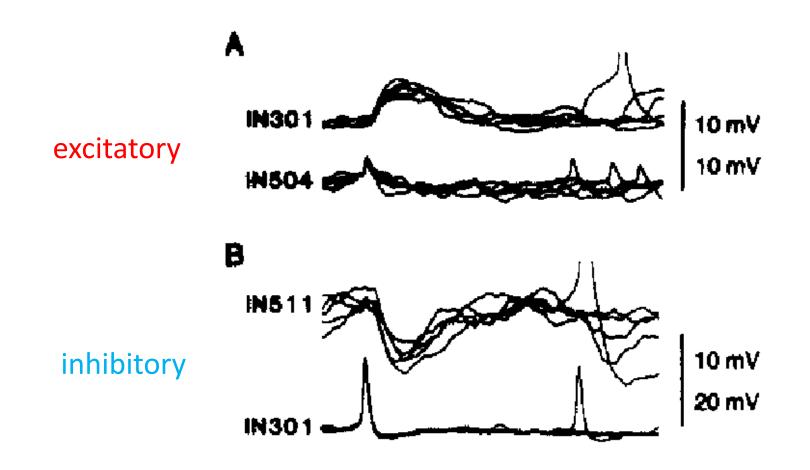


Leech swimming circuit (Stent et al., Science, 1978)

Intracellular recording during fictive behavior

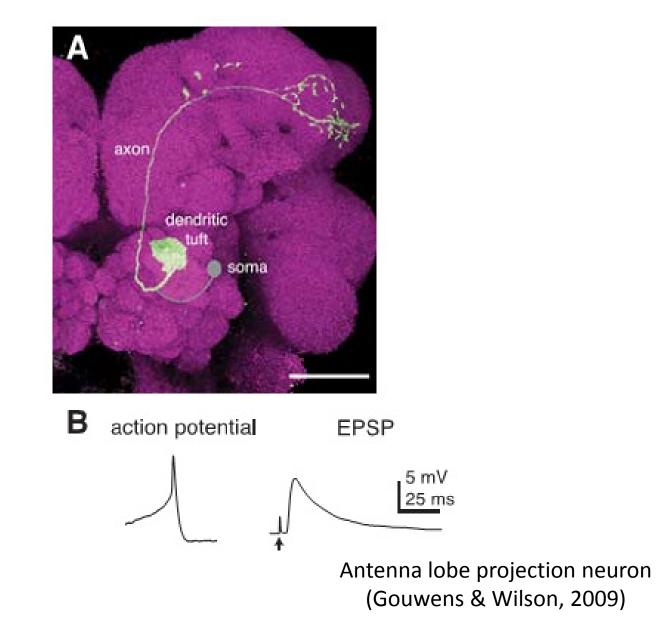


Paired recordings in locusts

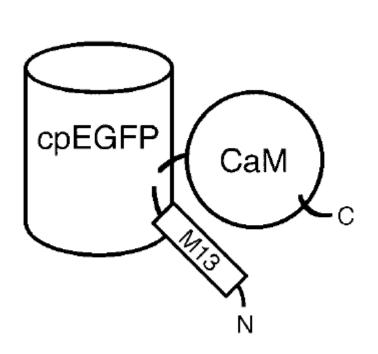


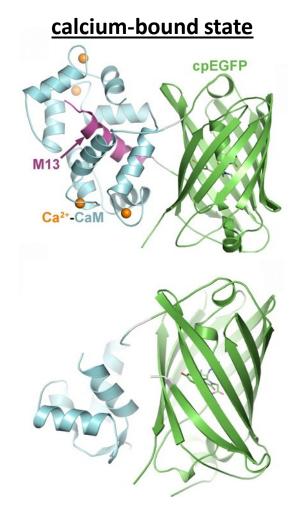
Robertson (Trends Neurosci, 1996)

Combining genetics with electrophysiology



GCaMP: A fluorescent indicator of neural activity via calcium levels





calcium-free state

http://en.wikipedia.org/wiki/GCaMP