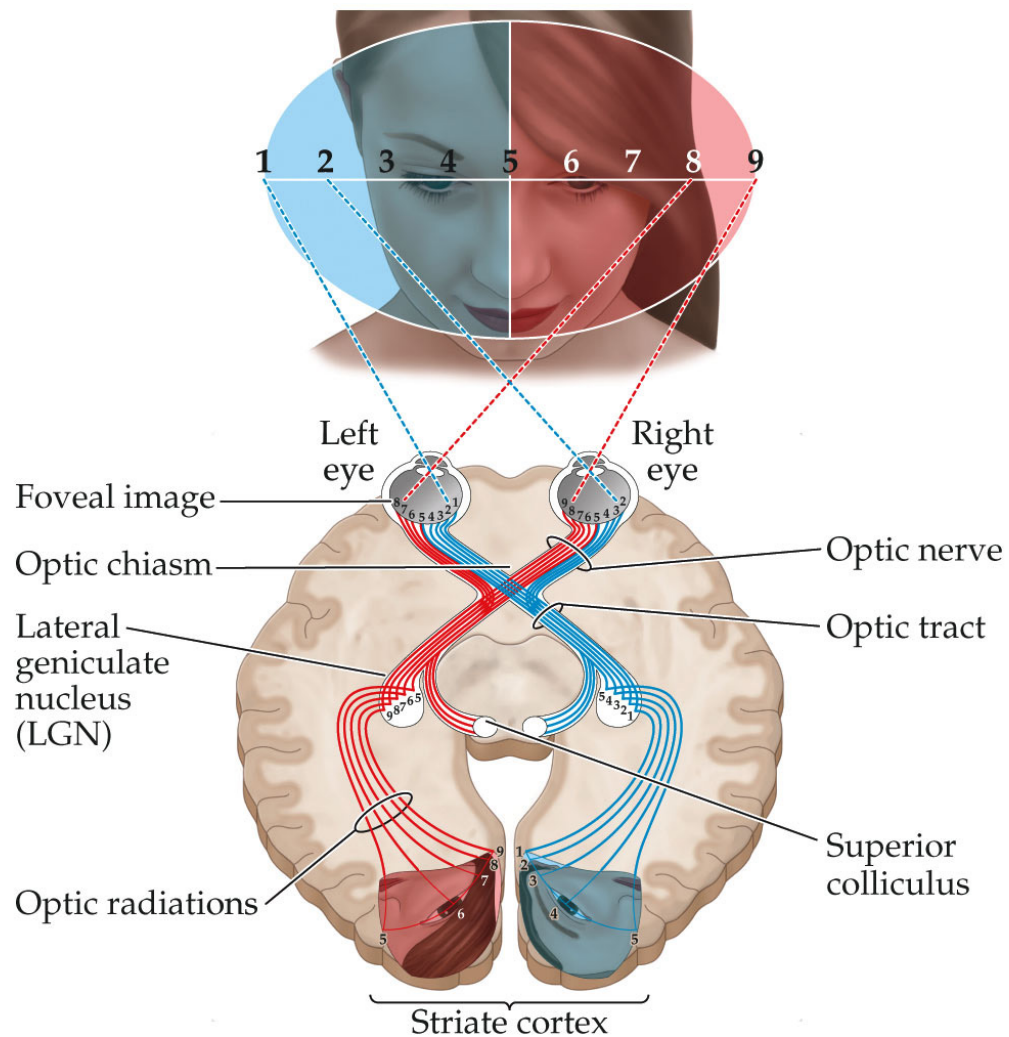
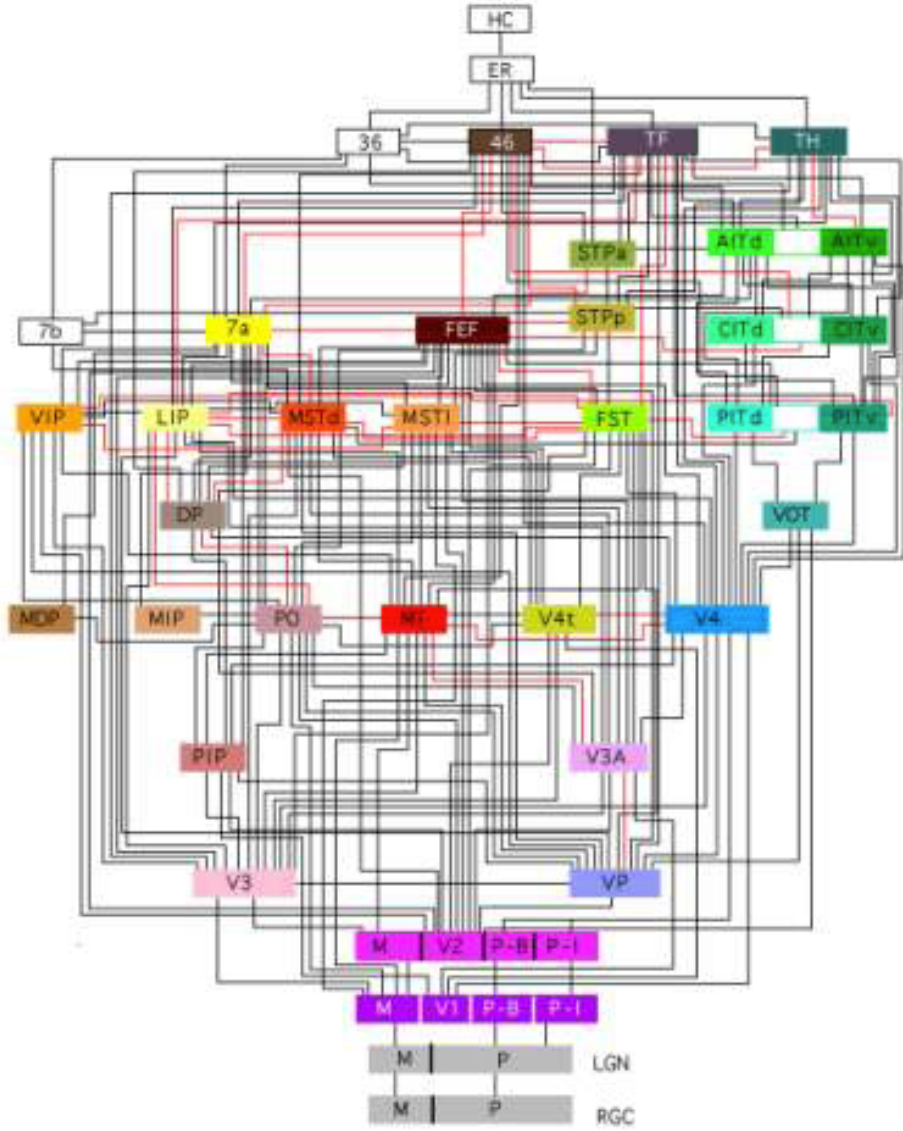


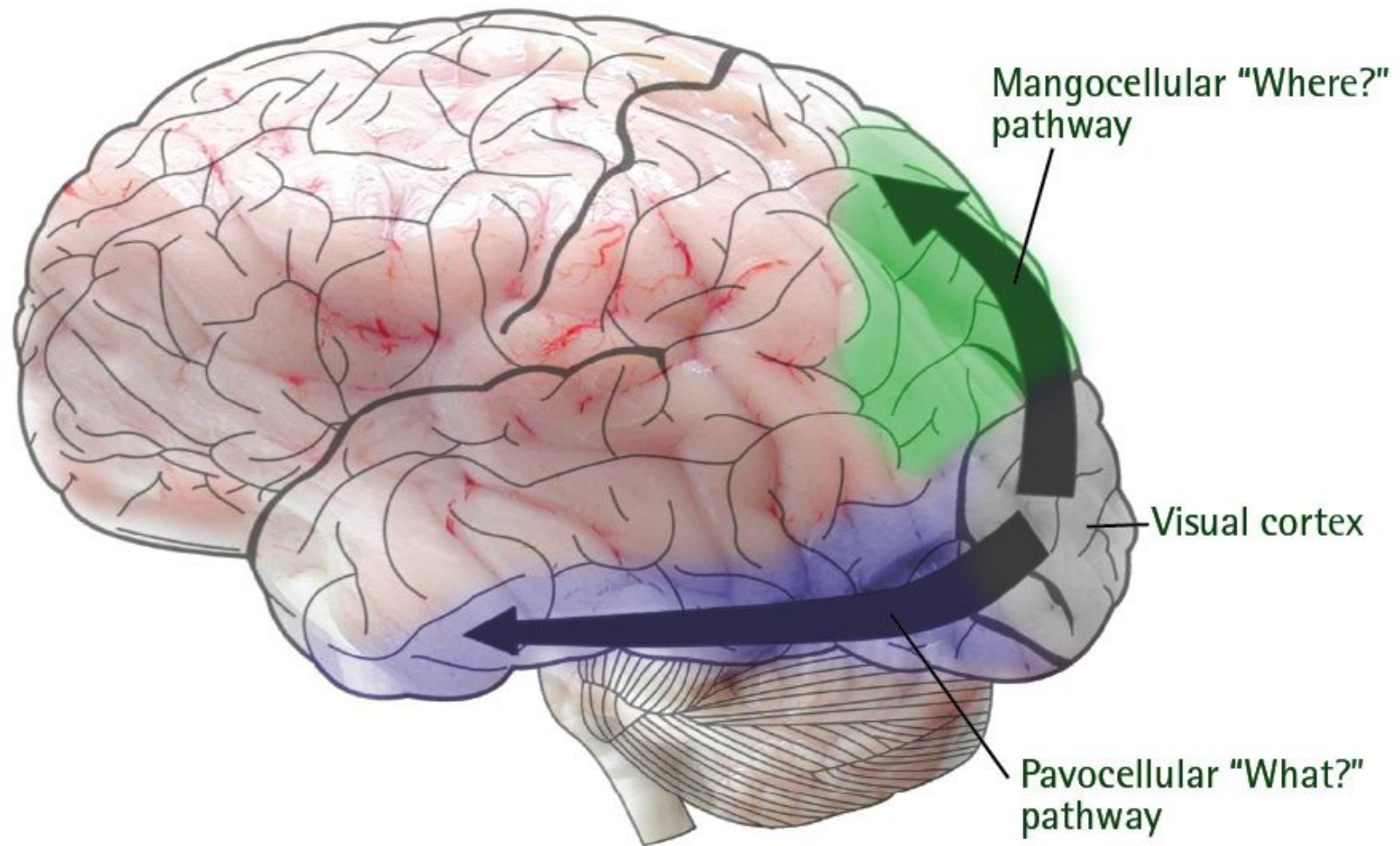
A motivational tale from vision & visual feature detection



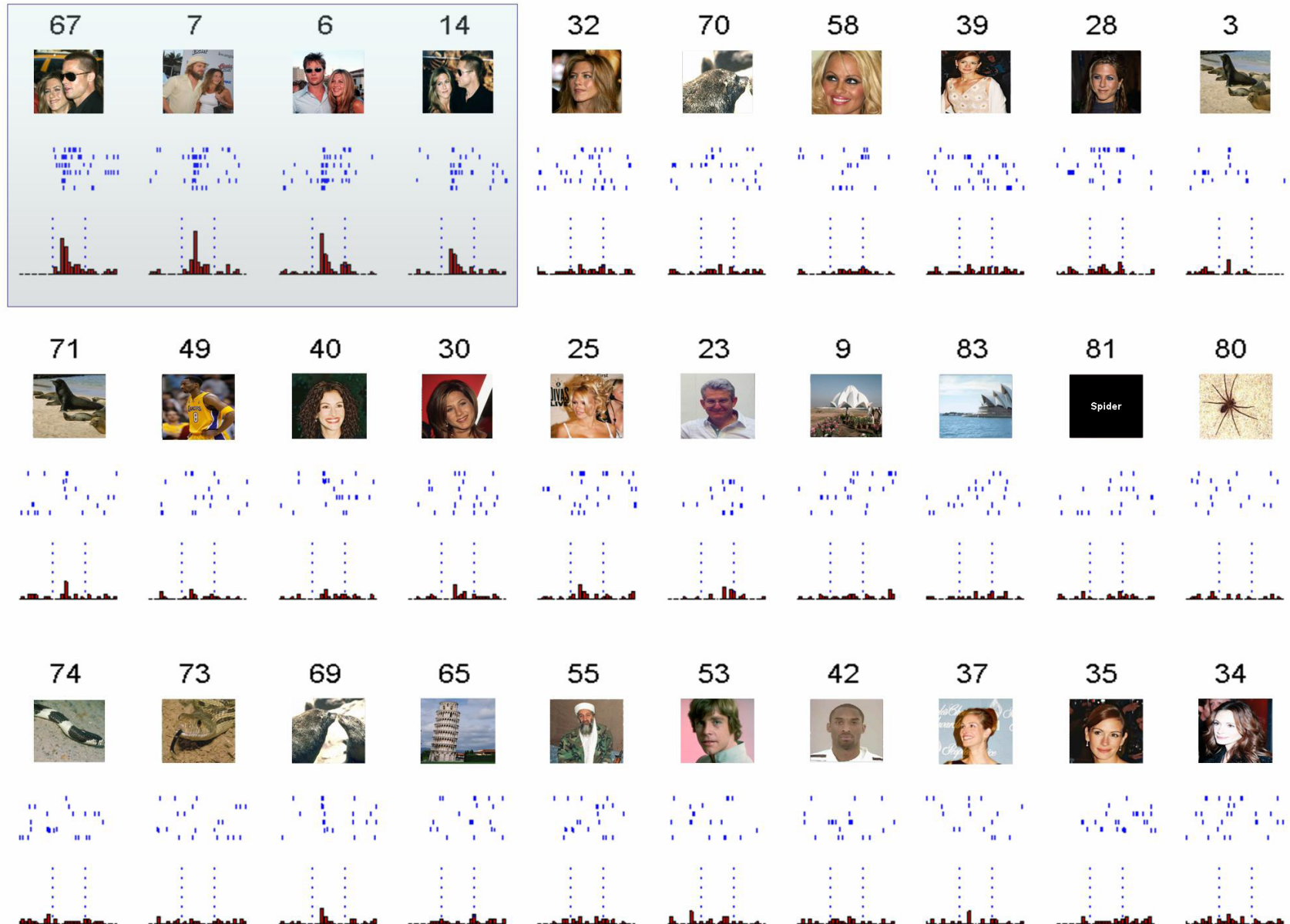
The subway map of signal flow in visual processing



(Very) roughly two pathways of high-level processing



High-level vision: Recognizing the concept of the (former) couple “Brad and Jennifer”



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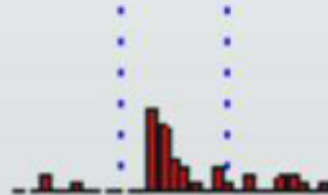
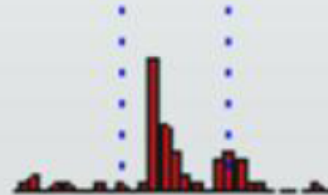
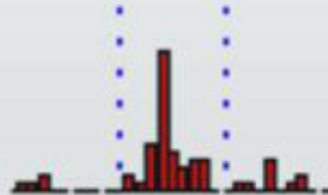
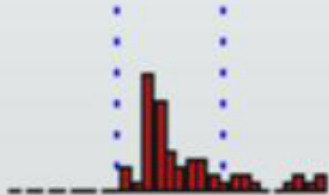
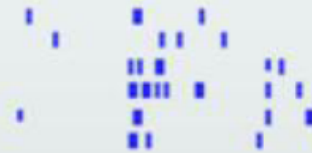
7



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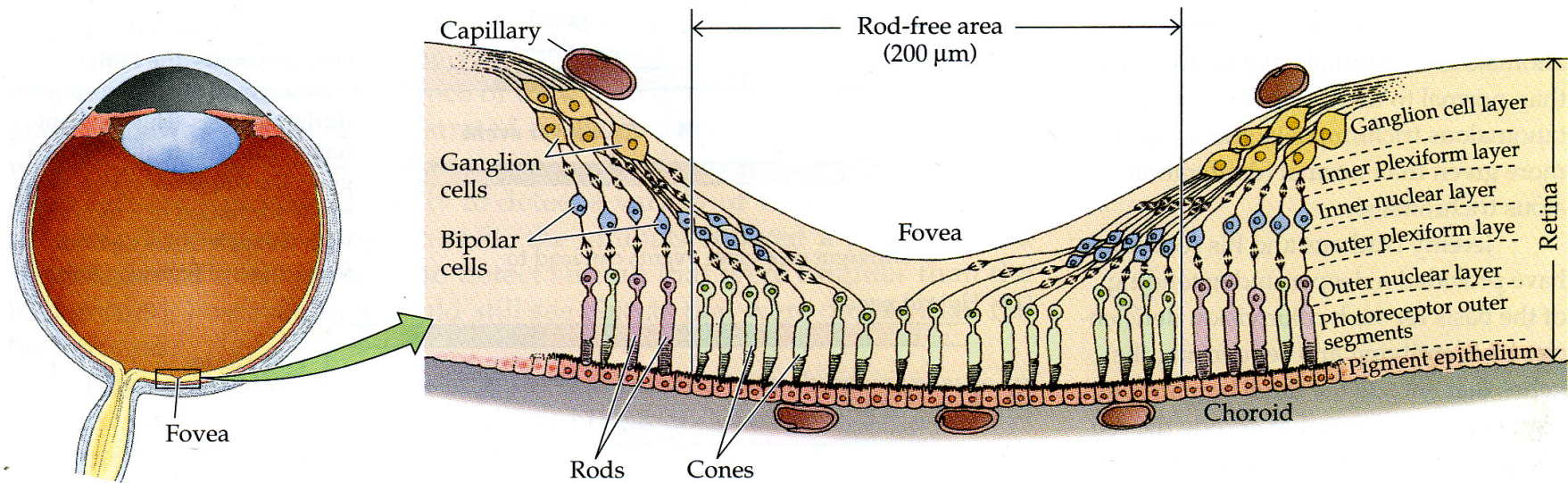


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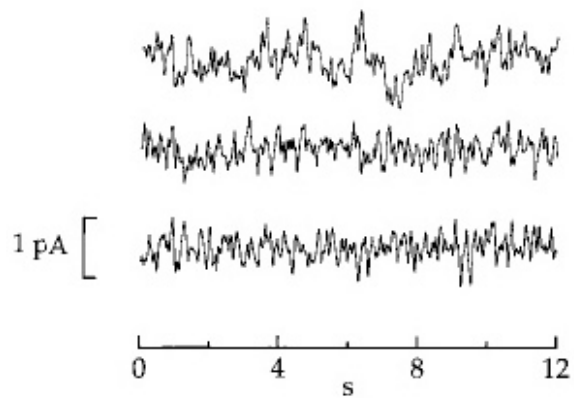


The retina

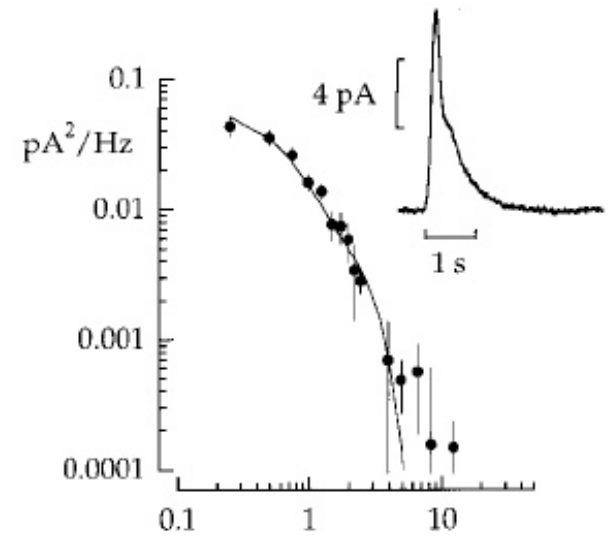
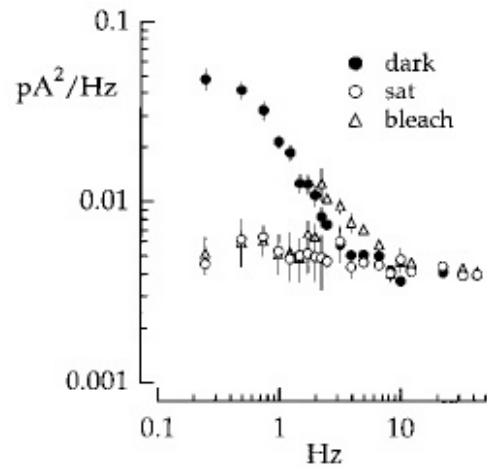
Where light meets the brain and signal processing begins



Dark noise in photoreceptors

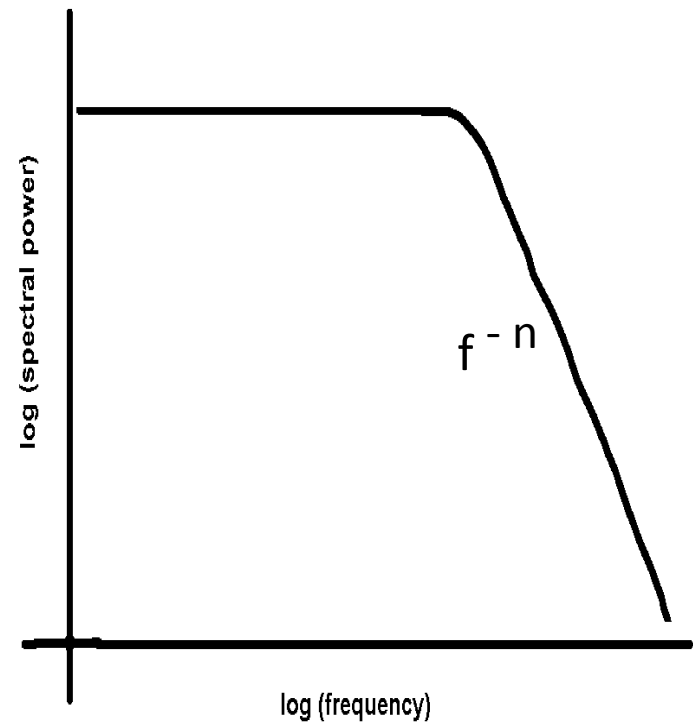
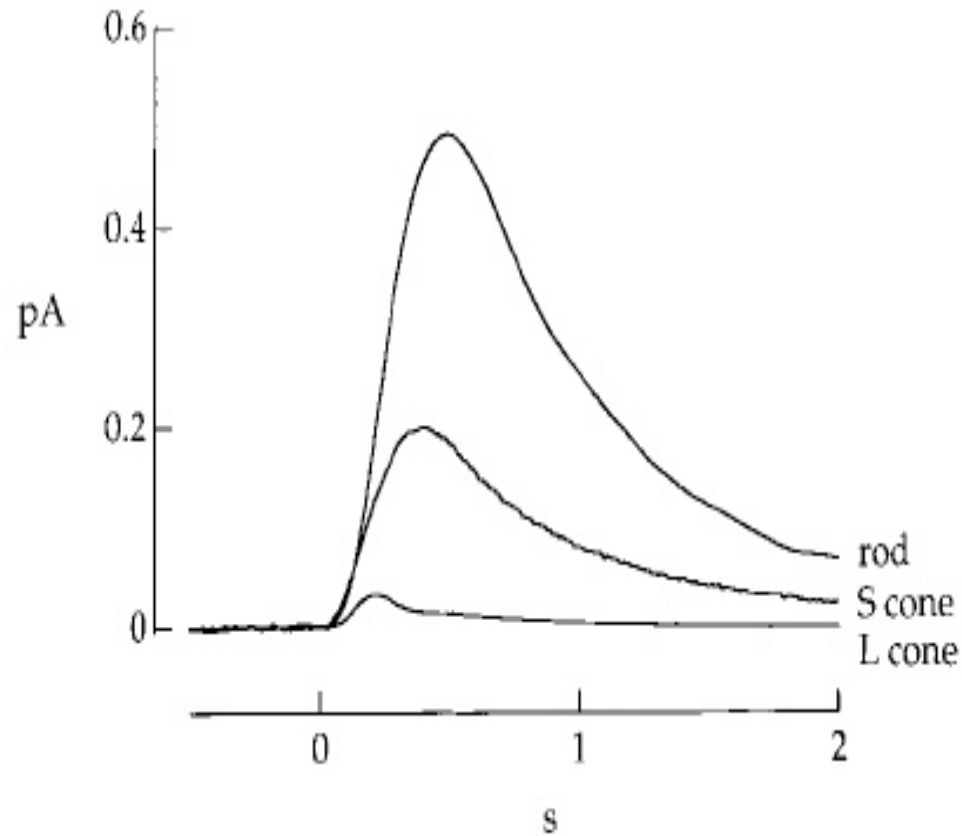


Dark Noise plus Instrumental Noise

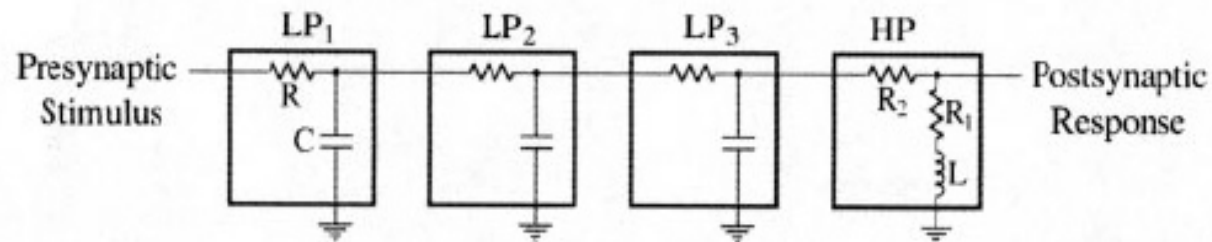
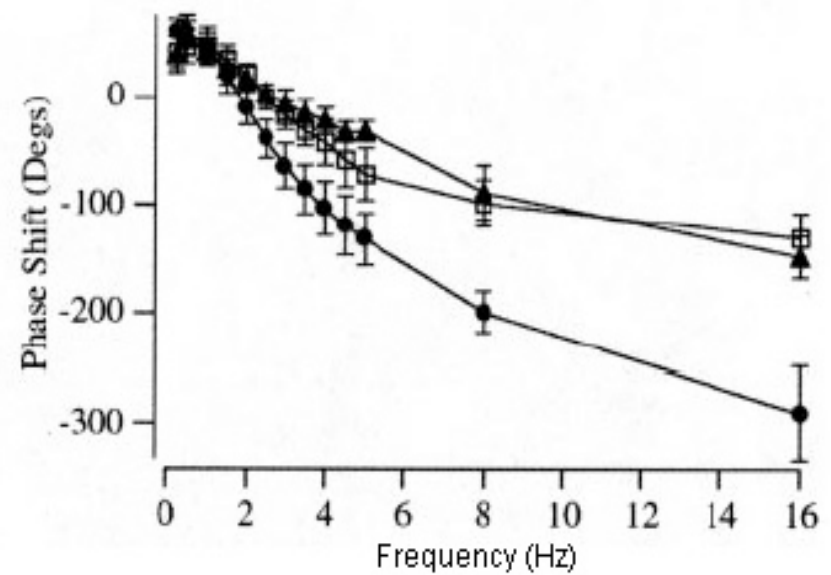
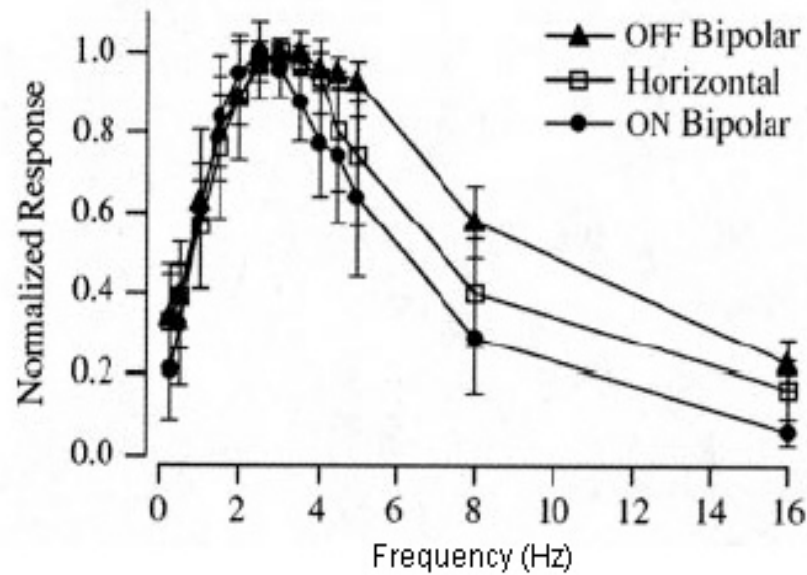


Dark Noise

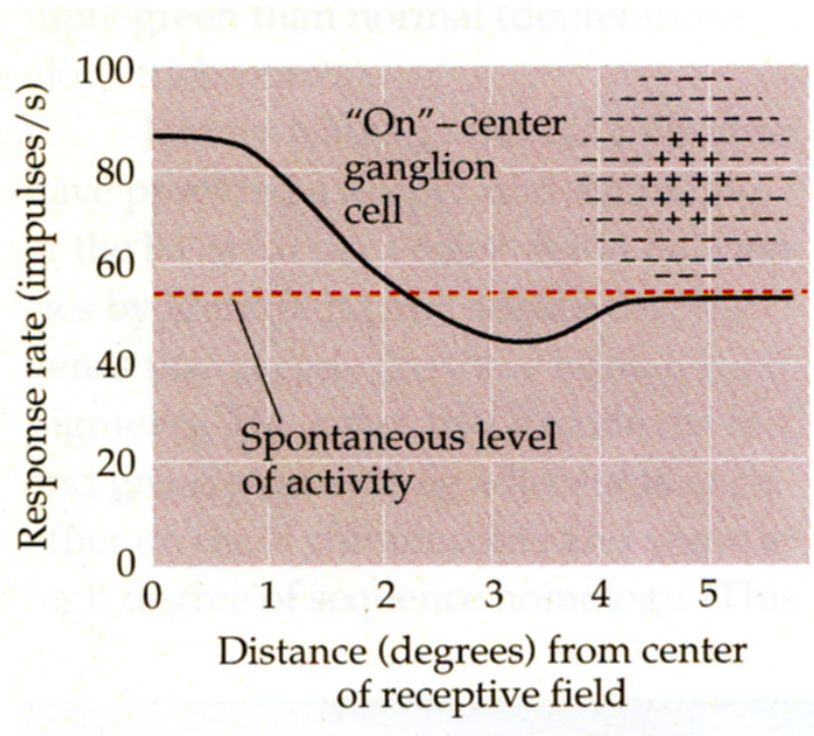
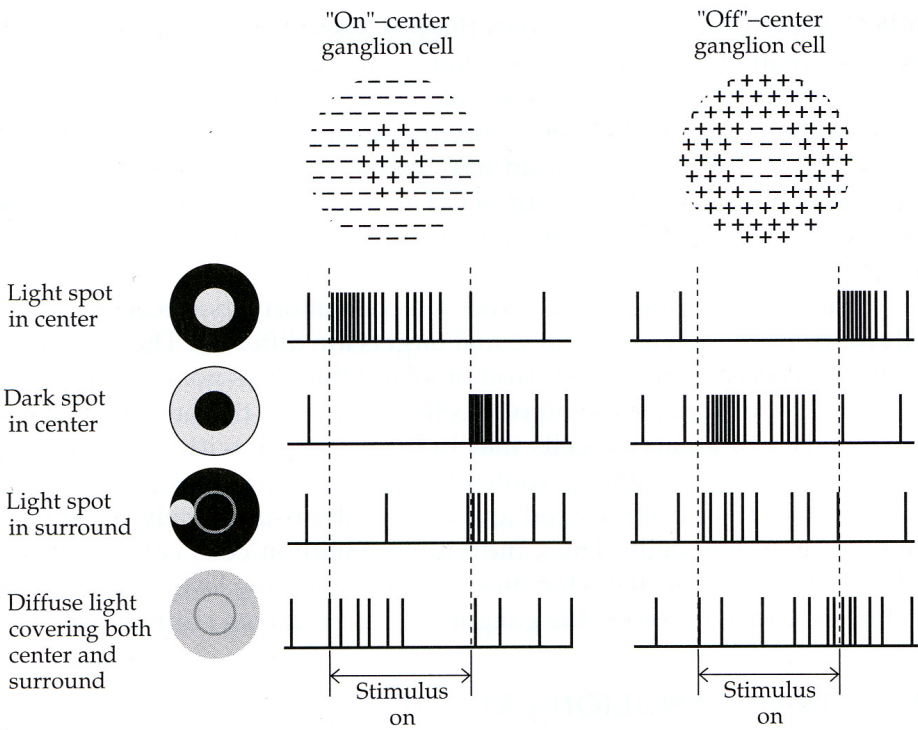
The single photon response is of the form $t^n e^{-t/\tau}$



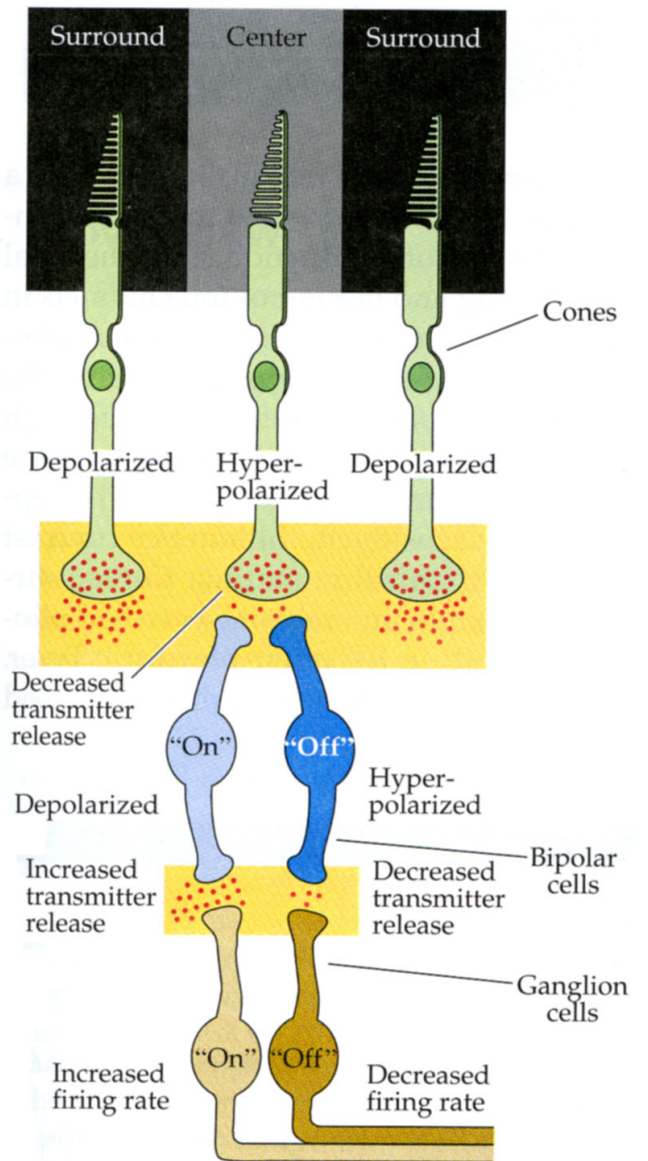
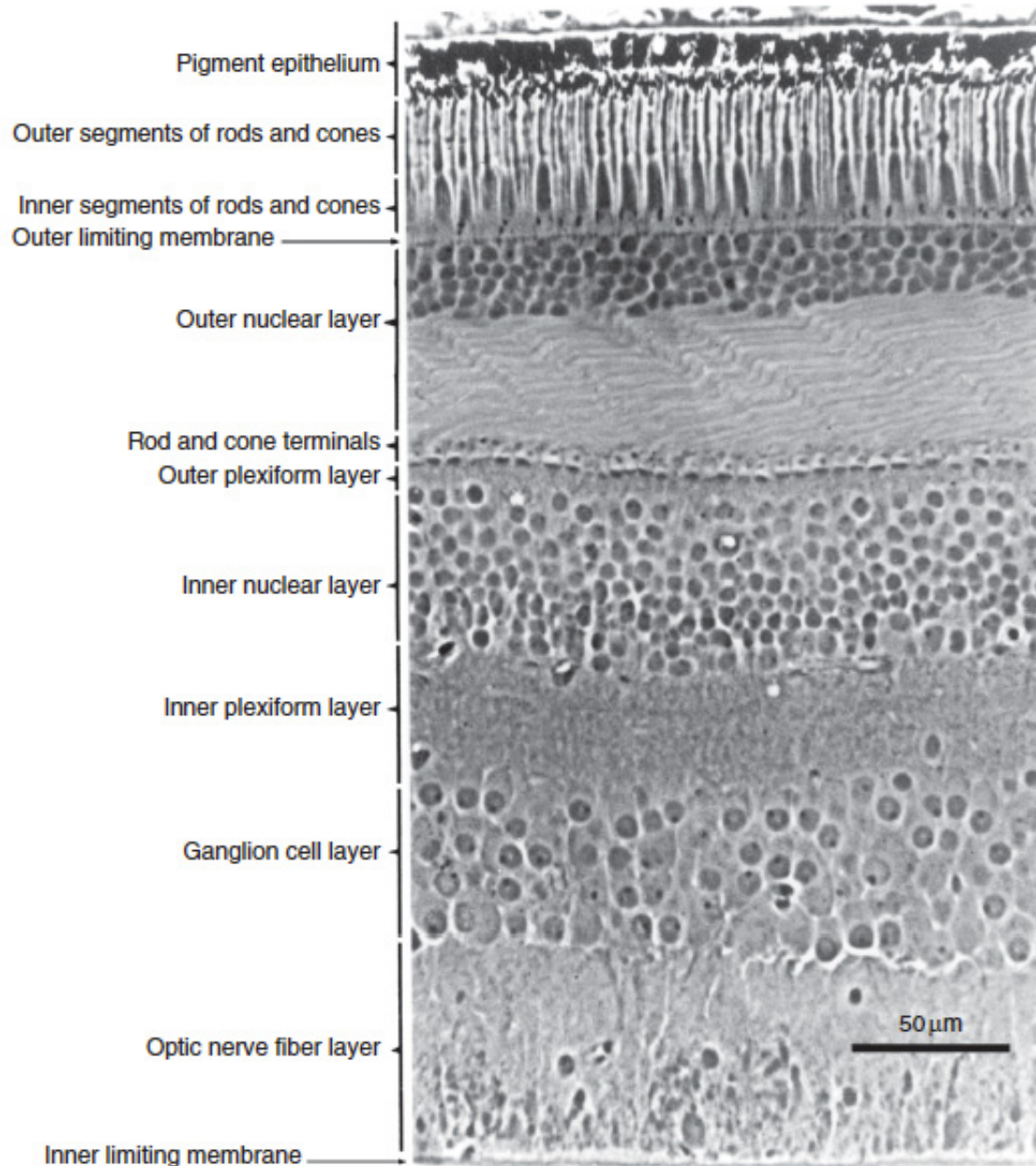
Filtering photoreceptor output for speed AND low noise



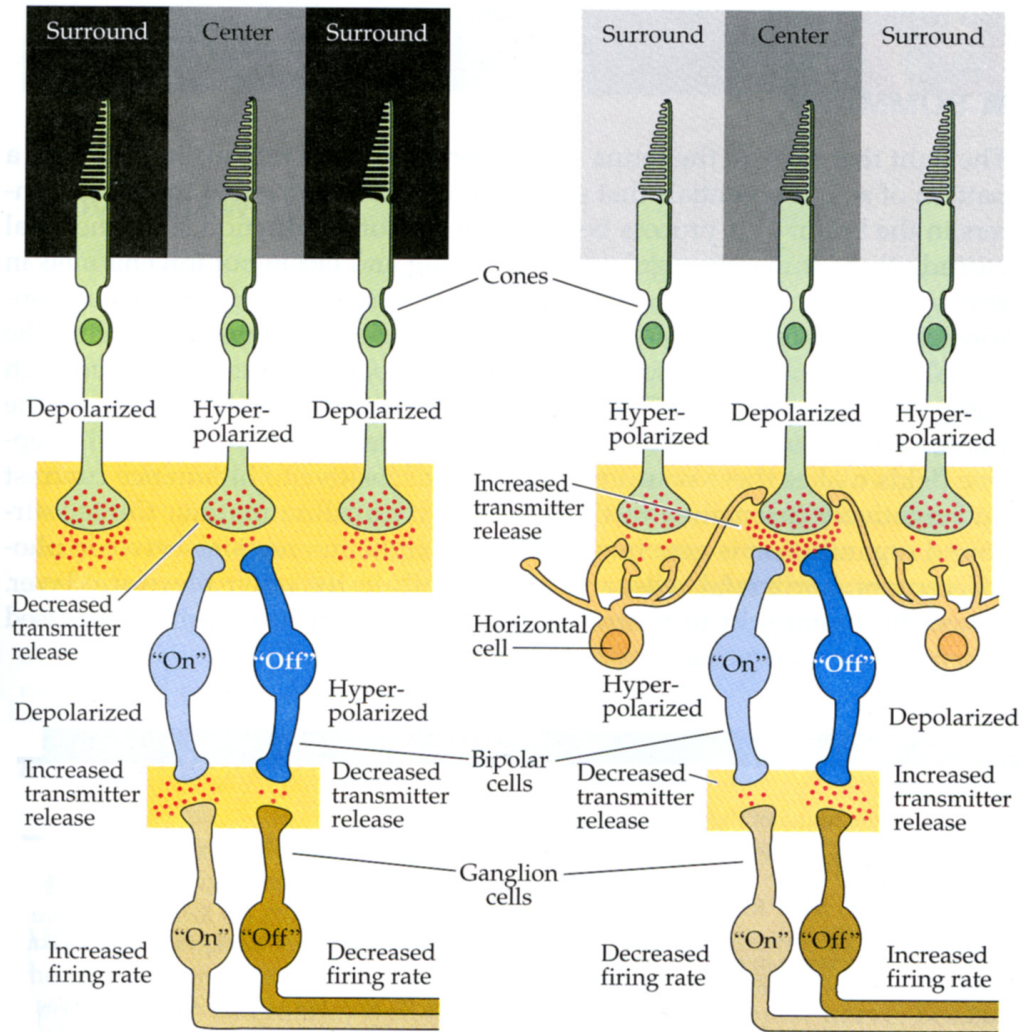
Classic output from retinal ganglion cells: Center-surround or Laplacian in cylindrical coordinates



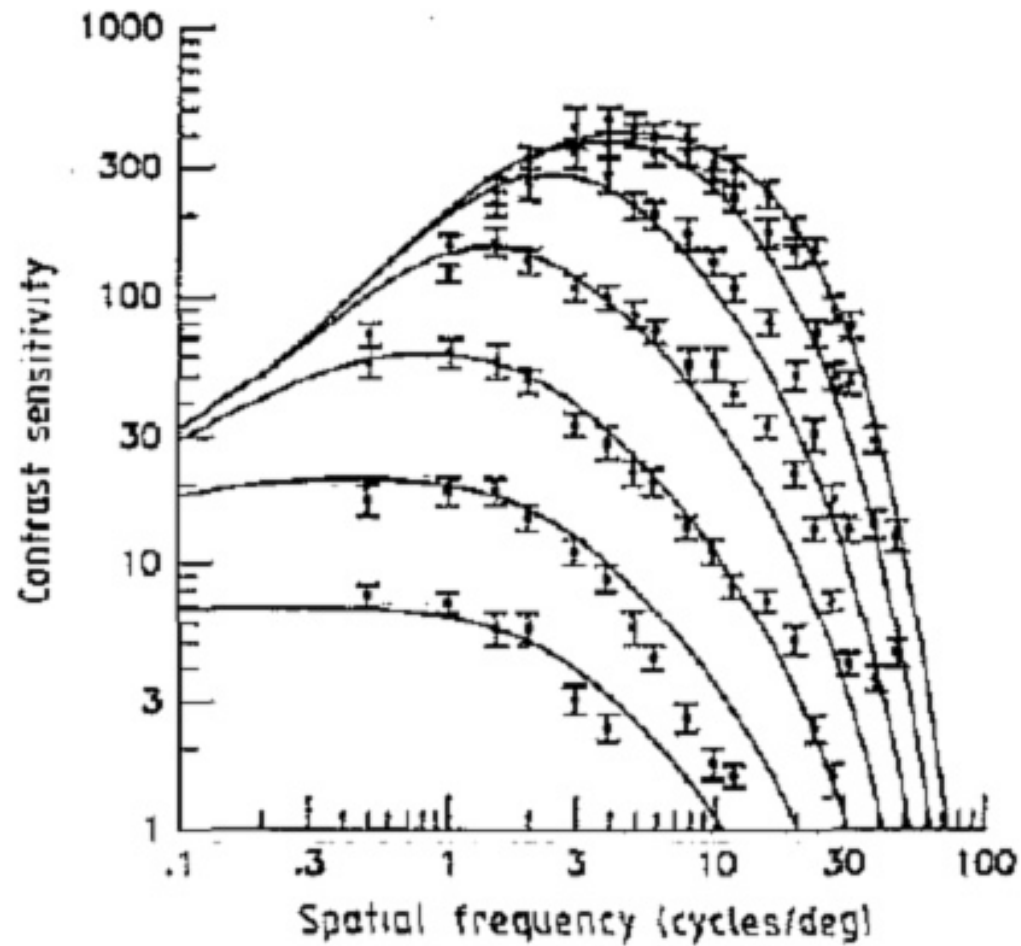
Classic retina wiring diagram



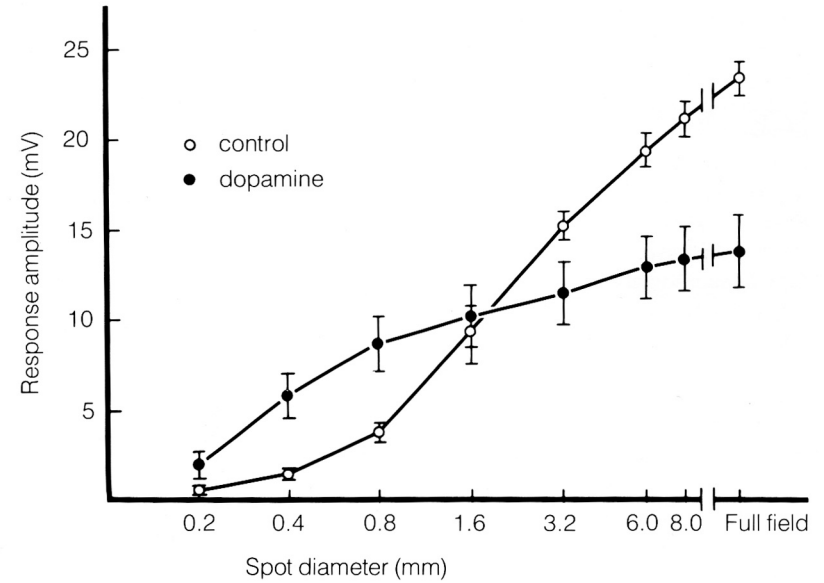
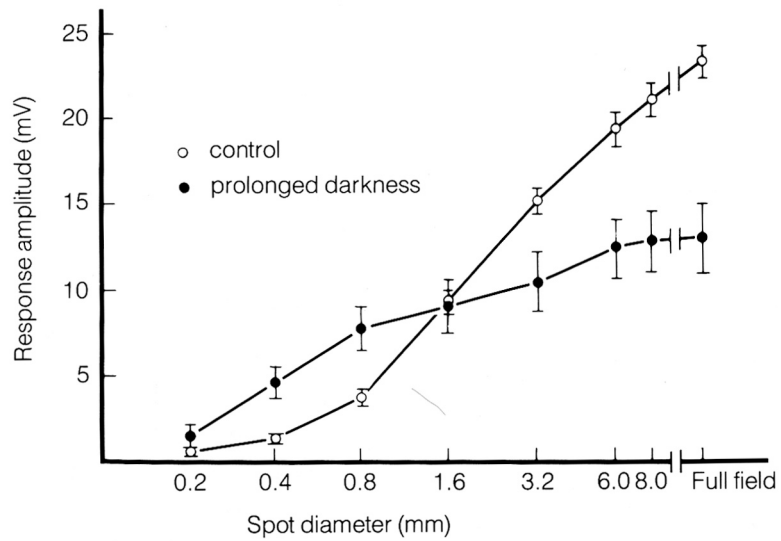
Classic retina wiring diagram



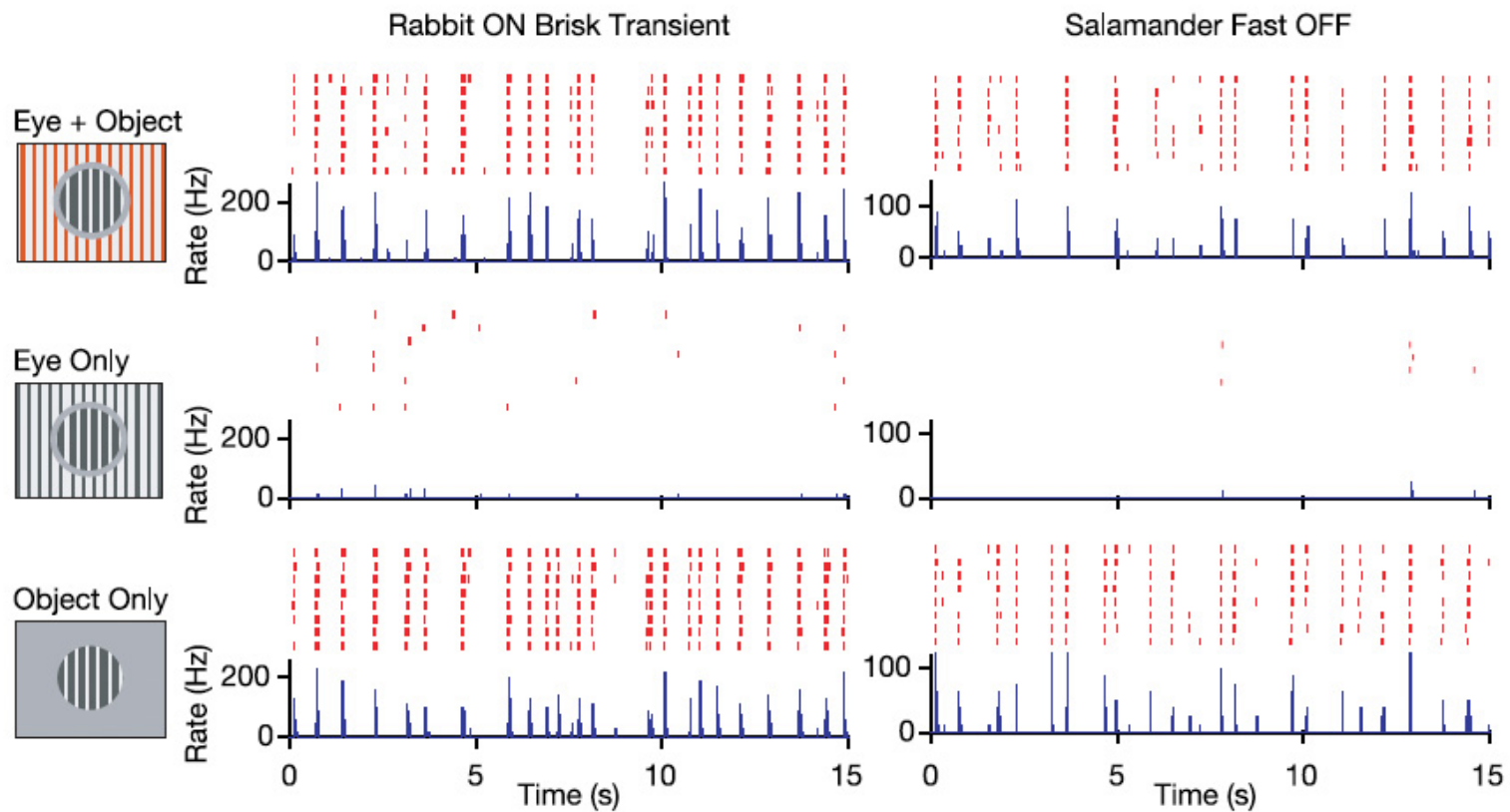
Light intensity modulates center-surround versus central response



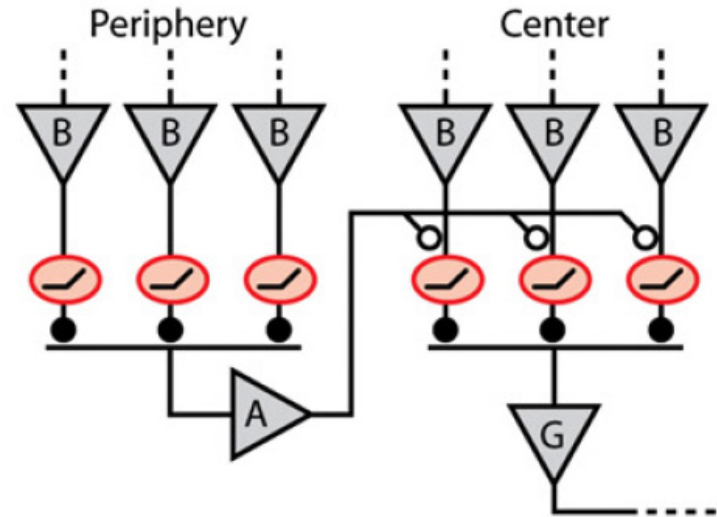
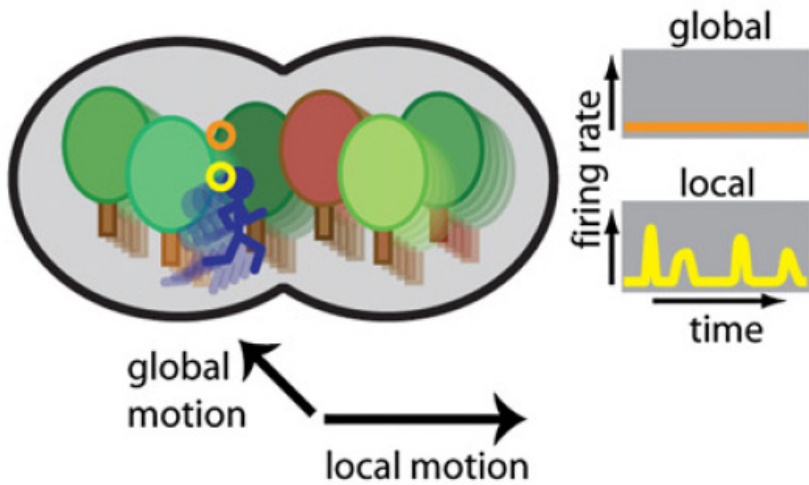
Dopamine regulates spatial averaging by Horizontal cells



Retinal ganglion cells that responds to *relative* motion



Center-surround mechanism to parse *relative* motion



Both adaptation and hedging by Retinal Ganglion cells

