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PERCEPTUAL SYSTEMS	
	When a stimulus is coded through the RATIO of response across multiple cells
	When multiple pre-synaptic cells all communicate to one post-synaptic cell
	When one presynaptic cell communicates to many post-synaptic cells
	Set of receptors whose actitvty influences the activity of target cell
	Type of above: stimulating center increases target response, non-center decreases it
	Type of map that preserves spatial relaitonships (as along a sensory surface)
	In cortex, disproportionate enlargement of the rep. of a sensory area of low convergence
	An area of the brain specialized for processing one particular type of information
	The problem posed by having several of the above, and yet perceiving wholes
VISION	
	Rear layers of neurons in the eyeball
	Cells that respond to light; show spontaneous, graded release of inhibitory NT
	Above that are convergent, sensitive to motion & low light, mainly in periphery
	Above that connect few:1, sensitive to color & detail, dispersed plus conc'd in center
	Central area of above receptor types only, connected 1:1 for highest acuity
	Next cell in pathway, spontaneous, graded potentials, release excitatory NT
	Inter-neurons that modify reaction of above, implicated in color opponency
	Next cell in pathway, action potentials, release excitatory NT
	Formed of axons of the above
	Place where above leaves eye for brain, also called "Blind Spot"
	Inter-neurons that modify reaction of above, implicated in contrast effects
	Flow of ions in and out of receptors in low/no light
	Process of converting light into a neurological signal
	Chemical stored in outer segment of receptor cells that react tolight
	Level of light (bright vs. dim?) that results in greatest release of NT from receptors
	Level of light (bright vs. dim?) that results in greatest release of NT from bipolars
	High-detail discrimination, as from low convergence of Cones, that retains info on diffs
	High likelihood of detection, as from high convergence of Rods that cross next cell's threshold
	Cell activity resulting in release of inhibitory NT to cells orthogonal to info pathway
	Illusion created by above that alters perception of central grey depending on its surround
	Direction of inhibition (uni- or bi-directional?) in direction-senstive motion circuit
	Nucleus in Thalamus that processes most visual information from eye
	In cortex, set of cells, in 6 layers, that all respond to the same preferred stimulus
	In cortex, set of cells that all have same RF and include set of orientation cols & blobs
	Topological map that preserves spatial relationships found on Retina
	Primary Projection area for vision in Occipital Lobe of cortex
	When half of each retina delivers info from one visual field to the contralateral side of brain
	Visual pathway specialized for color and detail, that "flows" along bottom of cortex
	Above also called...because it terminates in this lobe of the cortex
	Above also called…because it conveys info that helps you to identify a stimulus or individual
	Small ganglion cells that begin this pathway, with small RFs & sustained response
	Visual pathway specialized for motion and localization,"flows" along top part of cortex
	Above also called …because it terminates in this lobe of the cortex
	Above also called…because it conveys info that helps locate & interact w/stimuli
	Large ganglion cells that begin this pathway, with large RFs & transient response
	Nucleus in Midbrain in this path, processes some visual (esp motion) info from eye
	Tho vis cortex damaged & no visual experience, midbrain enables some vis localization
	Color coding per ratio of activity of 3 cone types reponding to 3 overlapping ranges of freqs
	Recoding of above, via lateral inhibition from Horizontal cells, into Red/Green & Blue/Yellow
	LGN or Ganglions with R+G-, G+R-, B+Y- or Y+B- receptive fields
	V4-mediated process that enables ID of color under diff light conditions (AKA "Retinex Theo")
	Cells in V1 that respond to line, or gradient, oriented in particular direction
	Cells in V2 that give best response to *moving* lines of particular orientation
	Number of dark/light changes per degree of visual angle
	Frequency gradients (high vs. low?) that V1 cells in Parvo path are most sensitive to
	Frequency gradients (high vs. low?) that V1 cells in Magno path are most sensitive to
	End of Parvo pathway, includes cells that prefer hand, face, other complex stim
	Deficit from damage to Fusiform Gyrus, patient cannot recognize familiar faces
	Cortex with direction-sensitive cells, responds best to stimulus moving across retina
	Cort4x with optic-flow detectors that repond best to contraction/expansion of whole scene
	Area in anterior Temporal lobe that responds to Biological Motion

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	In V2 or MT, cells that respond to degrees of diff between location of an image on 2 retina
	Cells in higher Parietal cortex that respond to the affordances of an object
	Parietal cells (also found in Premotor Cortext) that respond to seeing self or other perform task
See also schematic circuits for Motion Detectors and Simultaneous Contrast (see "Supplement" on Lecture page of website)	
AUDITION	
	Membrane vibrated by air molecules moving down Auditory Canal
	Three tiny bones linked into lever system, amplify vibrations of above
	Membrane vibrated by third bone above, initiating vibration of…
	Thick, incompressible, potassium-rich fluid that fills…
	Coiled, three-chambered tube in Inner Ear which contains…
	Section of central chamber where Receptor Cells are found
	Membrane that runs along floor of above structure, moves up and down
	Membrane that runs along roof of above structure, moves forward & back
	Auditory receptor cells that are deformed between the above two membranes
	Tiny "hairs" extending from above cells whose deformation initiates transduction
	Ion that enters receptor, descreasing its polarity
	Ion that enters receptor, causing chain reaction that results in release of NT
	NT released by auditory receptors
	Type of change in polarity in receptors (graded vs. action potential?)
	Cells to which Receptors communicate, whose axons exit to brain
	Type of change in polarity in these cells (graded vs. action potential?)
	Relative levels of activity across differentially-resonating Bas. Memb. code freq
	Rate of oscillation of Bas. Membrane codes freq per rate of Auditory Nerve Firing
	Time during which Auditory Nerve Fibers cannot fire next Action Potential
	Since each above can only fire 1/1000sec, must work together at alt. intervals
	Ganglions involved in above can all only fire at the same phase (e.g.) peak of input wave.
	Diffs used for localization, caused by "head shadow" attenuating high freqs
	Diffs used for localization, comparing peak & trough of lower frequencies
	Diffs used for localization, per race of left vs. right Onset signals to Superior Olive
	Receptor Cells that show divergent connectivity, for detail freq discrimination
	Receptor Cells that show convergent connectivity, for loudness discrimination
	Axons of next cells in path form this nerve
	Above is part of (#?) Cranial Nerve
	Next synapse in Medulla, beginning of separate information pathways
	Cell in above nucleus that duplicates the incoming signal
	Above helps generate what kind of map that reps low>high frequency across cell array
	Cell in above nucleus that transforms incoming signal into a transient burst
	Cell in above that transforms incoming signal into one of graded, increasing amp
	When information from only one ear is involved, as in the above
	When info from both ears is combined, good for localization, as in the following…
	Next auditory site, also in Medulla, responsible for Orienting Reflex
	Next auditory site, in Midbrain, where info integrated with visual at nearby site
	Next auditory site, in Thalamus, site of among other things…
	Primary Projection Area for audition, in Temporal Lobe of cortex
	Secondary Auditory area in cortex
	Area with critical role in the comprehension of speech, in left hemisphere
	Type of complex auditory input processed by higher auditory centers in right hemi.
VESTIBULAR SYSTEM	
	Type of receptor cells in Vestibular system
	Ion, when not/allowed to enter cell, changes receptor's polarity
	Changes in velocity & orientation alter this kind of firing rate
	Where receptors respond to head tilt via gravity-induced deformation by crystals
	Three fluid-filled tubes that detect changes in angular acceleration
	Effect when visual and/or motor feedback is inconsistent with vestibular info
	Cranial nerve (#?) shared with audition
SOMATOSENSORY SYSTEM	
	Class of receptors that respond to temp, pain, itch and hair follicle movement

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	Receptors in above class that respond to "noxious" (potentially damaging) stimuli
	Class of receptors that respond to touch and internal movement
	Detection of internal movement of muscles and organs
	Type of response by above type of receptors (graded or action potentials?)
	Process by which one type of receptor is fatigued, showing its role in coding
	Nucleus of Thalamus in somatosensory pathway
	Path for pain and temperature info to brain, crossing over in Spinal Cord
	Path for touch and internal motion info to brain, crossing over in Brainstem
	Which of above paths tends to be myelinated
	When damage to one side of spine results in diff losses on ipsi- vs. contra-lateral sides
	Location of Primary Projection Area (S1) for somatosensory info
	Name of topological map of body surface found there
	Parts of body that fill disproportionate areas of this map
	Neurotransmitter released by pain receptors and other cells in pain pathway
	Theory concerning the top-down blocking of pain info entering brain
	Midbrain area that is probably the source of this blocking
	"Endogenous morphines" released by above
	Type of inter-neuron in spine that responds to above input
	Opiate antagonist that reduces analgesic effects of morphine & acupuncture
See also graph for adaptation & across fiber coding in Warm-Best & Cool-Best receptors	
(see "Supplement" on Lecture page of website)	
MOTOR PROCESSES	
	Type of muscle, made of parallel fibes, attached by tendons to bones
	One type of above, that moves bone toward body, in antagonistic pair with…
	…other type, that moves bone away from body
	Where neuron releases NT that depolarizes muscle fiber cells > contraction
	Neurotransmitter released by effector neurons to contract muscles
	The contractile unit of a muscle fiber, consisting of…
	Thick protein filament with knobby bead-like Cross Bridges along it, and…
	Thin braided protein filament, anchored to muscle, that above hook into & tighten
	A proprioceptor that detects passive stretch of a muscle, triggering…
	A mono-synaptic reflex that contracts muscle to counter passive stretch
	A reflex triggered by Tendon Organs detecting excessive contraction in muscle
	A reflex triggered by pain detectors, rapidly removing skin from source of pain
	A reflex involving an Oscillator Circuit producing a fixed-rate rhythm
	Reflexes, such as "rooting" or "grasping", found in newborns
	Area of cortex that includes body map, sends movement commands to Stem and Cord
	Location of above
	Anterior to above, active during preparation to move, receives esp from Visua-Spatial areas
	Above includes cells that respond to image of self, or other, performing familiar manual task
	Lateral area that plans articulation, helps generate gramatical sentences (esp in left hemi)
	Dorsal to above, also active during prep, esp for rapid moves, receives from Parietal
	Fast, crossing paths from Pyramids in cortex, esp. for precise control of peripheral moves
	Above stops at this Midbrain structure on way from Cortex to Medulla & Cord
	Mainly ipsilateral pathways for posture & gross movement of neck, shoulders & trunk
	"Little brain" involved esp in coordinated movement requiring aiming and timing
	Movements that occur very rapidly & generally cannot be altered once begun
	"Telephone poles" in cerebellar cortex that help code time as distance
	"Wires" in above whose action potentials release excitatory NT
	Central areas that receive from "telephone poles" and send output to Brain/Cord
	Set of forebrain structures controlling posture, muscle tone, & smooth movement
	Movement impairment, marked by rigidity, tremors etc, from degeneration of…
	Midbrain structure whose dopaminergic axons synapse in Basal Ganglia
	Precursor of dopamine, crosses barrier, converted by neurons into dopamine
Note, for above sensory & motor systems, helpful to know PATHWAYS, including locations of major synapses	