

VISUAL SYSTEM

1. Crossed & Inverted
2. Loop of meyer, Temporal lobe, and lingual gyrus
3. Parietal, Cuneus gyrus
4. Pretectal nucleus
5. Edinger-Westphal
6. Superior Brachium
7. Saccadic movements
8. Lat. Geniculate n., optic radation, visual cortex, frontal eye field (area 8), corticobulbar tract
9. Visual, somatic, and auditory
10. Superior colliculus, Area 8 (frontal eye field)
11. Motion in visual field :: visual attentiveness & identification of broad outlines of objects
12. Pri. Visual cortex :: visual discrimination & saccadic movements to complex visual stimuli
13. V₁ (feels the stimulus), VII (winks)
14. Sclera, cornea
15. Thin lining over sclera and inside of eyelids
16. Area of the retina with the least amount of vessels
17. Pit in macula where all retinal layers are shifted away to provide the least distortion
18. Ganglion cells, bipolar cells, photoreceptors
19. Communication of bipolar cells and ganglion cells for convergence and lateral inhibition
20. More, more, 1 type, more
21. Night
22. In day light
23. Cones
24. Blue, red, and green
25. Large amounts of rods and ganglion cells, decreased cones, and more sensitive to light
26. -40mV, Glutamate
27. Cyclic G → cGMP → Na channels kept open
28. Pigmented epithelium
29. The relative excitation & inhibition of the three cone opsins account for color vision
30. Retinol bound to opsin (7 transmembrane α -helic receptor) in Rods
31. Configuration change from Cis to Trans
32. Hyperpolarization to -70, reduced
33. PhosphoDiEsterase (PDE)
34. Light → Bleach → Active opsin → Transducin → PDE → cGMP → Close Na⁺ → Hyperpolar
35. Unbleached rhodopsin, Ca⁺



VISION OF BIPOLAR, GANGLION, NUCLEI, & CORTEX

36. Receptive Field (Center & Surround)
37. Via the horizontal cells
38. Antagonistic
39. G-Protein coupled Glutamate receptors
40. Glutamate gated ion channels opening
41. When light is off
42. Cancel each other out, no net change
43. Differences in illumination within their fields
44. Antagonistic
45. M (Magnocellular) & P (Parvocellular)
46. Large receptive fields, for object motion & low contrast stimuli, aid low resolution vision
47. Color vision, discrimination of fine details
48. Small
49. R-G & B-Y, wavelength
50. Posterior to anterior (1-6)
51. 1 & 2
52. 2,3,5 (Way to remember, 2+3=5)
53. Area 17 Striate Cortex
54. Information from lateral geniculate body (Figure 2)
55. P-type information via the $IVC\beta$:: all cortical layers
56. M-type information via $IVC\alpha$:: all cortical layers
57. Superior Colliculus & pulvinar
58. LGB, bulk of optic radiation, and claustrum
59. Alternating ocular dominance columns
60. Association visual cortex, 18 & 19
61. Refer Figure 3

CEREBROVASCULAR ACCIDENT

62. 15%, 20%
63. When systemic pressure drops, or arterial CO_2 concentration raises
64. Hypocarbnia
65. Ischemia, infarction
66. Anoxia
67. Ischemic Stroke (80%), blockage due to a clot or atherosclerosis
68. Hypotension, reduced oxygen supply causes the stroke



69. Thrombotic, Embolic, Lacunar
70. Slow thickening, hardening, and narrowing until blood flow is reduced
71. Stenosis → Inflammatory response → Cytokine release → Repeat cycle
72. Blood vessel elasticity
73. Calcification and Lack of elasticity
74. Dislodged clot that travels through vessels
75. 15% of embolic strokes, blood pools in atria until a clot is formed, can break off and go to brain
76. Heart failure/post-heart attack, Artificial heart valves, heart valve disorders
77. Fat particles, tumor cells, air bubbles
78. Series of very tiny ischemic strokes :: clumsiness, weakness, and emotional variability
79. 38%
80. Japanese
81. The blood brain barrier
82. Parenchymal (10% of all strokes), subarachnoid (5%), arteriovenous malformations
83. NMDA, Ca⁺
84. Right parietal lobe stroke
85. Hypertension combined with atherosclerotic vessels
86. Hypertensives, Heart attack patients taking blood thinners (especially PPA)
87. Blood vessel bursts and leaks into subarachnoid space (very painful)
88. Abnormal connection between arteries and veins that may rupture
89. Heart attack, heavy blood loss, infection, anesthesia, and blood pressure medications

STROKE RISK FACTORS & SYMPTOMS

90. 65 years or older
91. Females
92. All minorities
93. 2-3 times, 4 times
94. Southeastern US (Especially NC, SC, GA, MS, and SoCal)
95. Hypertension
96. Systolic and diastolic measurements
97. Hemorrhagic and ischemic stroke
98. Diabetes and Insulin resistance
99. Weight centered around the abdomen (Apple shape)
100. HDLs
101. Ischemic & Hemorrhagic
102. Ischemic ONLY



103. Older men with hypertension
104. Cocaine, Methamphetamines, Steroids
105. Intense stress response, chronic stress, depression
106. Oral contraceptives (w/ auras), smoking, decongestants, Raynaud's syndrome
107. Elevated Homocysteine :: Vitamin B6, B12, and folic acid deficiencies
108. Play a role in atherosclerosis by initiating the inflammatory response
109. Lung infections (Chlamydia pneumonia), Periodontal disease, Varicella Zoster Virus
110. Varicella Zoster causing Cerebral vasculitis (inflamed brain blood vessels)

STROKE SYNDROMES

111. Transient Ischemic Attack
112. Speed of symptom onset
113. Bilateral
114. Thrombosis :: large embolism
115. Headache, nausea & vomiting, altered mental state
116. Headache, nausea & vomiting, light sensitivity, & neurological abnormalities
117. Although both may go unnoticed, SB's will lead to mental impairment
118. Sudden loss of consciousness that results from temporary global cerebral ischemia
119. Hypotension, ↓ cardiac output, blood/metabolic disorders, CNS disorders
120. One side paralyzed/weak :: entire upper or lower half paralyzed/weak
121. Sup. Frontal, Inf. Temporal, Parietoccipital, Sup. Portions of Ant&Sup. Central, Sup. Parietal Lobe
122. Inf. Temporal, Cuneus, Lingual, Hippocampal, splenium, & thalamus
123. Precuneus, cingulated, sup. Frontal, paracentral, most of corpus callosum & fornix
124. Anterior & middle cerebral
125. Dimming, color changes, scotomas
126. Broca's or Wernicke's Aphasia
127. Astereognosis/Neglect
128. Contralateral spastic
129. Contralateral spastic paralysis of lower extremities (paracentral lobule)
130. Mental confusion (prefrontal), abulia (bilateral prefrontal)
131. Corticospinal, thalamic tracts, sensory fibers
132. Contra spastic & s. loss of body & face (internal capsule), contra homonymous hemianopsia (LGB)
133. Contralateral homonymous hemianopsia with sparing of macula (striate cortex)
134. Alexia (splenium)
135. Anton's syndrome (basilar junction)
136. Inability to read



137. Failure to recognize blindness
138. able to move but don't know how (Premotor cortex) {Middle Cerebral}
139. Contra. Homonymous hemianopsia (Optic radiation), contra. conjugate gaze (frontal eye field)
140. Face & UPPER extremities
141. Eyes fixed in the direction of disaster
142. Contra sensory & thalamic syndrome, hemiballism (subthalamic n.), & all midbrain symptoms
143. Failure of central control of respiration
144. Large infarction in ventral pons paralyzing all voluntary movements except of the eye
145. Anterior Spinal (Medulla), Pontine (Pons)
146. Contra para. of body (pons/pyramid corticospinal fibers); contra DS of body (medial lemniscus)
147. Medial strabismus of ipse side (CN VI damaged), & horizontal gaze looking away from stroke
148. Internuclear ophthalmoplegia (No communication of CN VI with CN III)
149. Ipsilateral tongue paralysis (CN XII injured)
150. Finish each
 - a. Contra, spinothalamic tracts, anterolateral system
 - b. Ipse, nucleus of spinal tract of trigeminal, medulla
 - c. Ipse, chief sensory n., pons
 - d. Nystagmus
 - e. Ataxia, intention tremors, dysmetria, dysdiadochokinea, pendular reflexes, hypotonia
 - f. Ipsilateral Horner's syndrome & Hiccup
151. Ptosis, miosis, anhidrosis, enophthalmos :: disruption of sympathetics & cervical gang to the head
152. PICA :: Vagal symptoms (CN X, Solitary tract, & nucleus ambiguous damaged)
153. Ipsilateral Bell's Palsy (CN VII) & Deafness (CN VIII)
154. Inability to chew and jaw deviation (CN V)
155. Perinaud's Syndrome :: Pinealoma
156. Paralysis of upward gaze, Loss of papillary/light reflex (pretectal n.)
157. Weber's Syndrome :: Claude's Syndrome
158. Contra paralysis of body & face (corticospinal/bulbar), Ipsi oculomotor palsy (CN III)
159. Ptosis, mydriasis, dilated unresponsive pupil, lateral strabismus
160. Ipse oculomotor palsy, hemiballism, contra loss of all sensation
161. Benedikt Syndrome

AUTONOMIC NERVOUS SYSTEM

162. Synaptic specifications, great distances
163. Nicotinic ACh
164. Postganglionic sympathetic



165. Neuropeptide Y, substance p, neurotensin, somatostatin, enkephalins
166. NE, α 1- α 2- β 1- β 2- β 3 receptors
167. Sympathetically
168. Intermediolateral gray of T1-L2
169. Ventral root, white rami communicantes, paravertebral sympathetic ganglion
170. Higher, same, and lower levels
171. Form grey rami communicantes, then enter spinal nerves
172. Peripheral blood vessels, sweat glands, and arrectores pilorum muscles
173. Horner's syndrome
174. T1-T5
175. Carotid plexus
176. Cardiac plexus :: heart & lungs
177. Direct branches, grey rami
178. Splanchnic
179. Prevertebral ganglion (coelic, superior mesenteric, inferior mesenteric)
180. GI tract, pancreas, liver, kidney, bladder, genitalia, abdominal & pelvic viscera
181. Adrenal medulla (to release NE & Epinephrine)
182. CN III VII IX X, and Intermediolateral gray of S2-S4
183. Edinger westpall n. → ciliary ganglion → ciliaris muscle
184. Sup. Salivary n. → pterygopalatine or submandibular gang → lacrimal/sublingual/mand glands
185. Inf. Salivary n. → otic ganglion → parotid salivary
186. Dorsal motor / n. ambiguous → diffuse thoracic/abdominal → heart, lungs, GI tract
187. Column → pelvic splanchnic nerves → descending & sigmoid colon, pelvic viscera
188. GI tract, pancreas, gallbladder
189. Gut wall tension & chemical changes in gut
190. Smooth muscle, vasculature, secretions of the gut
191. Auerbach's :: Between longitudinal & circular smooth muscle layers
192. Meissner's :: Between circular smooth muscle and mucosa
193. VII, IX, X
194. Head & neck viscera
195. Vagus and spinal cord nuclei
196. Reticular formation and periaqueductal grey
197. Hypothalamus :: thalamus, amygdala, cingulate cortex
198. Parasympathetics, 1:3
199. Skin of the back
200. Skin of front & upper and lower extremities

