URINARY SYSTEM

1. Excretion of metabolic waste, regulation of water and electrolytes
2. Glomerulus and Bowman's Capsule : Malpighian Corpuscle
3. Renal corpuscle, convoluted tubules, collecting tubules and ducts, and medullary rays
4. Loop of Henle, Renal column, and 8-12 pyramids
5. Extension of cortex in the medulla, between pyramids
6. Vasa recta
7. Papilla, projects into the minor calyx and perforated by collecting ducts
8. Major calyx, pelvis and ureter
9. Nephron, renal corpuscles and tubules
10. Tuft of capillaries w/ an efferent and afferent arteriole
11. Vascular pole
12. Simple squamous, podocytes w/ foot processes
13. Urinary space
14. Endothelium and visceral layer
15. Physical and ion selective barrier of large proteins
16. Macula densa, JG cells, and extraglomerular mesangial cells
17. Urinary pole
18. Large columnar w/ granules lining distal straight tubules near the vascular pole
19. Monitor NaCl concentration of the afferent arterioles
20. Smooth muscle cells of the afferent arterioles
21. Secrete renin to regulate blood pressure
22. Phagocytosis, structural support, and secretion
23. Mesangium, at the vascular pole
24. Within & outside of the corpuscle
25. Passive and Active / sodium bicarbonate, water, and glucose
26. Proximal Convuluted Tubules, 80%
27. Lacis cells
28. Stellate irregular lumen with a brush border and lateral infolding and basal striations
29. Cubodial cells
30. More PCT, a larger diameter of the lumen, and less nuclei per cross section
31. Absorbs water, adds salts and urea to fluid
32. Blocks water and allow chlorides to be absorbed
33. Simple squamous
34. Convert ammonia to ammonium ions thus reducing the toxic effects
35. Circular lumen, lacks a brush border

36. Cubodial epithelium with a large number of nuclei and evident cell boundaries
37. In the absence of ADH, the CT is impermeable to water thus little water in urine
38. Polyurea or dieresis
39. Loop of Henle, Vasa recta, and collecting tubules
40. Collecting tubule, water
41. Ability to excrete hyperosmotic urine
42. Renal artery → Interlobar a. → Arcuate a. → Afferent a. → Efferent a. → Vasa Recta
43. Carry urine from the kidney to the urinary bladder
44. Transitional epithelium (urothelium)
45. Mucosa (in folds), muscularis (inner long, outer circular), and adventitia
46. Star shaped
47. Urine reservoir
48. Inner longitudinal, middle circular, outer longitudinal
49. 20cm, transitional, pseudo-stratified columnar, and stratified squamous
50. Shorter, Transitional and stratified squamous

ENDOCRINE

51. Hormones, directly into the blood vessels (no ducts)
52. Pituitary, thyroid, parathyroid, suprarenal and pineal gland
53. Neurohypophysis
54. Adenohypophysis
55. Pars tuberalis, pars distalis, and par intermedia
56. Chromophobes and chromophils (acido 40%, baso 10%)
57. Somatotrophs (Somatotropin and GH), and Mammotrophs (Prolactin)
58. Corticotrophs (ACTH, LPH), Gonadotrophs (FSH, LH, and ICSH), and Thyrotrophs (TSH)
59. Directly on organs
60. Regulate the activities of other endocrine glands
61. Colloid filled vesicle lined by columnar cells
62. MSH and B endorphin
63. Highly vascular cells arranged in clusters with functional gonadotrophs
64. Neurosecretory granules, Neurohypophysis
65. Axon terminal neurosecretions (oxytocin, and vasopressin/ADH)
66. Pituicytes
67. Stimulate kidney and liver to secrete somatomedin which increases long bone growth
68. Promotes the development of breasts and initiates milk secretion
69. Act like astroglia, are irregular branching cells

70. Maintain structure of adrenal & stimulates secretion of glucocorticoids and sex hormones
71. No known human function
72. Stimulate follicular development in ovary and spermogenesis in testis
73. Growth of thyroid epithelial cells and release of thyroxine
74. Stimulate leydig cells (testosterone), assist FSH (ovulation), formation on corpus luteum
75. Bilobed : T4, T3, and thyrocalcitonin
76. Capsule, septae, lobules, follicles (the functional unit)
77. Regulate cell and tissue metabolism
78. Regulates blood calcium levels
79. Cubodial epithelium, T3 & T4 secreting cells
80. Parafollicular cells (C Cells)
81. Colloid, thyroglobulin (inactive Thyroxine that is converted into T4 and T3)
82. Fetus
83. Ion and Na pumps
84. Calcitonin (suppresses bone reabsorption)
85. 4 parathyroid glands
86. Chief, polygonal central nucleus cells that secrete PTH (Parathyroid Hormone)
87. Oxyphil, large round cells with no secretory function that increase with age
88. Adrenal (Suprarenal) glands
89. ↑ blood Ca (osteoclastic osteolysis, ↓ kidney Ca excretion, ↑ intestinal Ca absorption)
90. 90% steroids
91. catecholamines
92. Zona glomerulosa (outer 15%), fasiculata (middle 80%), and reticularis (inner 5%)
93. Columnar in a curved plate
94. Aldosterone (mineralcorticoid)
95. Reabsorption of Na and H_2O, secretion of K by the kidney
96. Renin angiotensin system
97. Large polyhedral in long straight cords
98. Glucocorticoids (cortisol)
99. Zona glomerulosa to secrete aldosterone, and Capillaries to Vasoconstrict
100. Carbohydrate, protein, and lipid metabolism
101. Small cells, anastomosing cords
102. Depress immune/inflammatory response and wound healing, destruction of lymphocytes
103. DHEA (Dehydro-epi-andro-sterone) and hydrocortisone
104. Medulla, short anastomosing cords
105. Pale epitheliod postganglionic neuronal cells

106. Catecholamines (epinephrine and norepinephrine)
107. Pia mater, yes
108. Glucocorticoid
109. Pinealocytes w/ processes : melatonin
110. Blood pressure, Heart rate, Cardiac output, and Respiratory rate
111. Coronary artery
112. Capillaries of skin and gut
113. Pinealocyte, glial cells (interstitial), and brain sand
114. Circadian Rhythms, emotional day length response, delay sexual dev-op, secrete melatonin
115. Corpora arenacea, calcified concentrations that increase with age

EYE BALL

116. Tunics : Fibrous, Vascular, and Nervous
117. Stratified squamous epithelium, Bowman's membrane, Substantia propria (stroma), decemet membrane, and decemet endothelium
118. Limbus and canal of schlemn
119. Photoreceptors, conducting neurons, association neurons, and supporting cells
120. 10
121. Horizontal and amacrine
122. Sustancular cells
123. Cubodial epithelium : blood retina barrier, glare prevention, and phagocytosis
124. Rods
125. More, low light intensity/sharpness
126. Less, color vision
127. Mullers cells : metabolic barrier preventing large molecules from reaching the inner layers
128. Nuclei of rods and cones
129. Cones
130. Processes of photoreceptor cells, horizontal, amacrine, and bipolar cells
131. Analysis of visual cues
132. Nuclei of horizontal, amacrine, bipolar, and muller cells
133. Connection between bipolar and ganglion : Connection between amacrine and ganglion
134. Cell bodies of multipolar neurons
135. Layer of nerve fibers
136. Mullers cells

MALE REPRODUCTIVE SYSTEM

137. Sertoli and spermatogenic
138. Stratified epithelium, tunica propria
139. Sertoli (Columnar w/ apical and lateral processes extending from BM to the lumen)
140. Developing sperm
141. Physiological compartmentalization of epithelium, exo/endocrine, and phagocytic
142. Type A and Type B
143. Sertoli cells
144. ADP (concentrates testosterone), and fluid to help sperm pass into ducts
145. Inhibin
146. FSH, Sertoli cells, and ADP
147. Pale Type A → Type B → Pri. Spermatocytes → 2ary Spermatocytes → 2 Spermatids
148. Spermatogenesis
149. Move spermatozoa into ducts and secrete collagen fibers
150. Tunica propria
151. Large acidophilic, lipid droplets, testosterone
152. During fetal stages and after puberty
153. Coiled tube, pseudostratified ciliated columnar
154. Spermatozoa
155. Principle cells w/ sterocilia, and Basal cells
156. Smooth muscle surrounded by CT
157. Fluid absorption, phagocytosis, secretion, reservoir and maturation of sperm
158. Single straight, PSCE w/ sterocilia
159. Thrown into longitudinal folds
160. Lamina propria
161. Very thick : Inner longitudinal, middle circular, outer longitudinal
162. Mucosal, submucosal, and main layers
163. Tubuloavelolar, distended
164. Mucosal = the urethra | Sub & Main = ducts opening into prostatic sinuses
165. Columnar
166. Corpora amylacea (precipitation of secretory material which may calcify)
167. Clotting enzyme, acid phosphatase, PSA and fibrinolysin
168. Capsule, fibroelastic stroma, and lots of smooth muscle
169. Liquefy semen
170. Neutralize acids, enhance motility & fertility of sperm
171. Benign Prostatic Hyperplasia, mucosal and submucosal glands

172. Prostatic cancer
173. Peripheral, central, transitional, and periurethral
174. Sacs, upper blind, lower duct
175. Increase the secretory surface area of the pseudostratified columnar epithelium
176. Fructose, prostaglandins, amino acids, and fibrogen
177. 60%, 30%, 10%
178. Energy and nutrients for sperm
179. Fertilization (uterine contraction)
180. hold semen in the vagina
181. Coagulum

CELL MEMBRANE STRUCTURE & TRANSPORT

182. Phospholipids
183. Cholesterol, Glycolipids, and Proteins
184. Phospatidylcholine, P.dylserine, P.dylethanolamine, P.dylionositol, and sphingomyelin
185. Integral, and peripheral
186. Diffusion, Facilitative Diffusion, Osmosis, Active transport, and ion channels
187. Integral
188. Transmembrane, alpha-helical sections imbedded within bilayer forming aqueous pores
189. Ionic interactions
190. RBC spectrin
191. Molecules moving from area of high concentration to lower concentration
192. Surface area, concentration gradient, diffusion coefficient, and permeability coefficient
193. Small & lipid soluble molecules, carbon dioxide and oxygen
194. Flow of water across a membrane from lower to higher soluble concentration
195. Amount of force applied to prevent the water from moving across the membrane
196. Number of particles
197. Isotonic solution
198. 2, 1
199. Shrinks, hypertonic
200. Lyses (expands/explodes), hypotonic
201. Glucose transporter, multipass transmembrane protein
202. Area of higher concentration to lower concentration
203. Active transport, ATP
204. Na/K ATPase pump
205. Glucose/Na symport protein, cardiac muscle

206. Ion channels and membrane proteins
207. Artificial ionophores
208. They allow most small molecules to pass, not just specific ones

INTERCELLULAR SIGNALING

209. Endocrine, paracrine, chemical neurotransmitters, cell adhesion molecules
210. Diffusely, throughout the body
211. Exocytosis, triggering signals
212. Intracellular calcium ion concentration, secretory vesicles with plasma membrane
213. Cell type dependent
214. Steroid, peptide, and amino acid derivatives
215. Androgens, estrogens, progestins, glucocorticoids, mineralcorticoids, and vitamin D
216. Cholesterol, lipid soluble, freely cross membranes
217. Nuclear, alter genomic activity
218. Development versus adulthood, longtime
219. In blood by carrier proteins
220. Peptide and Amino acid hormones, thyroxin
221. Cell surface (except thyroxin is in nucleus)
222. Secondary messengers (cAMP, cGAMP)
223. Extracellular space, Neighboring cells (cell communication)
224. Polypeptide growth factors, certain amines (histamine, nitric oxide), prostaglandins
225. Mitogens, Trophic factors, chemoattractants
226. Eicosanoids
227. Stimulate cell proliferation
228. Promote growth and survival
229. Form a gradient followed by motile cells, selectins
230. Mast cells, allergen/antigen
231. IgE antibody binds to mast cell → cross-linkage → influx of calcium → histamine release
232. Venule endothelium, cells leak and swell
233. Stomach, release of stomach acid
234. Release of anterior pituitary hormones
235. Endothelial cells, increased smooth muscle contraction
236. Ach, increase intracellular calcium
237. NO synthase, Arginine to citrulline
238. Guanylate cyclase
239. SMLCK, relaxes smooth muscle, vasodilation

FEMALE REPRODUCTIVE SYSTEM

240. Apocrine sweat gland
241. Terminal, segmental (intermediate), and lactiferous duct w/ lactiferous sinus
242. Simple cubodial | Stratified cubodial, near nipple opening is stratified squamous
243. Simple cubodial epithelium
244. Inactive
245. Inactive phase
246. Merocrine (protein component), apocrine (fatty component)
247. Somatotropin, prolactin, oxytocin, progesterone, and estrogen
248. Nutritive and immunological (IgG and IgA)
249. Oxytocin
250. Estrogen (growth of ductal system), progesterone (alveolar development)
251. Rugae, stratified squamous epithelium, no glands, lamin propria CT papilla
252. Glands in cervix and bulbourethral glands
253. Veins that stimulate erectile tissue
254. Soliatary lymphatic nodules, leukocytes and lymphocytes
255. Cervix, spiral artery
256. Simple columnar ciliated, Peg cells (secrete fluid nutrition for ovum)
257. Ectocervix (intravaginal, strat. squamous) and endocervix (supravaginal, simp. columnar)
258. 10x increase in amount of mucous produced, less viscous sperm favorable environment
259. Perimetrium, myometrium, and endometrium
260. Peritoneum and adventitia
261. Very thick, 3 layers of smooth muscle
262. Subvasculare (long), Vasculare (middle, thick, circ), Supravasculare (outer, thin, circ & long)
263. Endometrium, simple columnar with patches of ciliated columnar
264. Narrow layer that serve for regeneration of endometrium
265. Lost during menstruation, superficial compacta, deep spongiosa
266. Menstrual, proliferative, secretory/luteal, premenstrual
267. Menstrual
268. Thick with edema, coiled arteries in CT, glands and epithelium proliferate
269. Estrogen, progesterone
270. Preovulatory period
271. Corpus luteum
272. Hypertrophy and corkscrewing of glandular cells, thickest time, glycogen mucin secretion
273. Necrosis of arteries, edema w/ leukocytes, glandular and epithelium breakdown

274. simple cubodial
275. cortex and medulla
276. albugenia, epithelium, cortex
277. cortex: ovarian follicles, connective tissue; medulla: loose connective tissue, blood vessels, lymphatics, and nerves
278. oocyte
279. Primordial germ cells
280. they degenerate
281. primordial, primary, secondary, and mature (Graafian) follicles
282. oocyte surrounded by a single layer of squamous cells, rests on a basement membrane
283. first meiotic prophase
284. squamous, cuboidal/follicular
285. 2
286. between the oocyte and follicular cells
287. maturation
288. fluid filled cavities
289. cuboidal, granulosa, membrana granulose
290. cavities filled with fluid, fuse to form the antrum folliculi
291. liquor folliculi
292. the cumulus oophorous, it attaches one pole of the oocyte with the granulose cells
293. corona radiate
294. it remains with the oocyte
295. stromal cells surrounding the follicles
296. Theca interna – close to granulosa cells, Theca externa – outer layers (fibrous)
297. highly vascularized and cellular, cells secrete steroid hormones, contains fibroblasts, collagen, and blood vessels
298. connective tissue, smooth muscles, and small blood vessels
299. Mature/Graafian
300. the cortex
301. thin
302. increases
303. they become loosened from the granulosa cells
304. steroid secreting cells
305. primary, secondary
306. 15-20 years
307. fertilization, metaphase, second

308. the process by which the oocyte is released from the Graffian follicle
309. uterine tube, 24 hours
310. it degenerates
311. 1
312. throughout the pregnancy, 10-12 days
313. human chorionic gonadotropin
314. granulosa lutein cells, theca lutein cells, progesterone, estrogen
315. a degenerated corpus luteum, as a scar
316. No, they sink into the cortex and disappear.
317. an indicator of a degenerated follicle