THE TONGUE

1. Speech, Swallowing, taste
2. Skeletal and Visceral Striated Muscle
3. Mucous
4. Sulcus Terminalis
5. Dorsal side, papilla
6. Core of connective tissue covered by epithelium
7. Filiform, Fungiform, Foliate, and Vallate
8. Filiform, Vallate (8-12)
9. Conical & elongated projections covered by stratified keratinized squamous epithelium
10. Provide rough surface for licking (No Taste!)
11. Lateral edge of the tongue, parallel ridges separated by clefts.
12. Sides only
13. Stratified squamous epithelium
14. Near the tip, as small spots
15. Highely vascular, above the surface
16. Few tastebuds on the dorsal surface
17. In front of the sulcus terminalis
18. Trench, ducts
19. On the sides and the dorsum
20. Serous, Glands of Vanebner
21. Foliate, Fungiform, and Vallate
22. Foliate, Fungiform, and Vallate
23. All the way through
24. Neuroepithelial (taste sensation), supporting (support), and basal cells (new cells)
25. Neuroepithelial and sustentacular (supporting)
26. Tip of the tongue
27. Posterolaterial to the tip
28. In the vallate papillae
29. Lateral side of the tongue

DUCTS AND GLANDS

30. Parotid
31. Palatine and Labial
32. Capsule, blood vessels and ducts
33. Lymphocytes and plasma cells, Salivary antibodies

34. Acini
35. Serous (Parotid), mucous (Palatine), and mixed (Submandibular/Sublingual)
36. Alveoli, Tubulo
37. Pyramidal cells, Zymogen granules (Protein secreting)
38. Mid cytoplasm, Flattened against the basement membrane
39. Mucinogen granules
40. Demilunes, Giauzzi and Hardenham
41. Mucous, serous
42. Canaliculi
43. Myoepithelial cells, between secretory cells and basal lamina
44. Intercalated, striated, and execratory
45. Intercalated and striated
46. Simple cubodial epithelium
47. Bicarbonate, Chloride
48. Simple cubodial (proximally), and Columnar (distally)
49. Potassium, sodium
50. Basal infolding
51. Main (excretory) ducts, only carry the secretion
52. Mucosa, submucosa, muscularis externa, and serosa
53. Simple cubodial or columnar (proximally), Stratified cubodial or columnar (distally)
54. Moisten food, taste bud stimulation, bicarbonate buffer, digestion of carbohydrates, anti-bacterial via lysosomes, normal tooth development, and Salivary IgA
55. Ptyalin (Salivary amylase)

GI TRACT GENERALITIES

56. Epithelium, Lamina propria, and Muscularis mucosa
57. Secretion, absorption, and protection
58. Loose connective tissue (glands, blood vessels, lypmphoid tissue, Nerve plexus)
59. Movement of the membrane and barrier to neoplastic cells, 2 layers of smooth muscle
60. Moderately dense connective tissue, Glands
61. Inner circular layer mixes the contents, outer longitudinal layer propels the contents
62. Myenteric (Auerbach's)
63. Peritoneum
64. Mesothelium, connective tissue

ESOPHAGUS AND STOMACH

65. 25cm, Stratified Non-keratinized squamous epithelium
66. Diffuse lymphatic tissue and glands
67. Muscularis mucosa
68. Dense CT, thrown in longitudinal folds with mucous secreting glands
69. Striated muscle to striated and smooth to smooth only
70. Rugae, distention
71. Area between rugae and the perpendicular grooves
72. Gastric pits
73. Cardiac, fundus, body, and pylorus
74. Fundus and body
75. Stomach prior to the s. intestine, long pits and short glands
76. Lamina propria
77. Simple columnar epithelium
78. Surface mucous cells, Surface and pits
79. Visible mucous (Lots of bicarbonate)
80. Long, branched, tubular glands, one single pit
81. Base, long neck, and narrow isthmus
82. Mucous neck, chief, parietal, and enteroendocrine
83. The neck regions, soluble mucous
84. Parietal cells
85. Chief cells, mostly in the neck region
86. HCL and intrinsic factor of castle, neck region mostly
87. Small, do not
88. Any level of the gland, but more at the base, and all rest on the basal lamina
89. Chief and Parietal cells
90. Gastrin secreted by the Enteroendocrine cells
91. Intrinsic factor
92. RBC's
93. Mal-absorption of b12, fragile large RBC w/ short life spans, Pernicious anemia result
94. Gastrectomy and fish tape worms
95. G cells, EC cells, A cells, D cells
96. Serotonin (gastric motility)
97. Glucagon (Antagonist to insulin)
98. Somatostatin (inhibits gastrin release)
99. Mucous secreting cells and enteroendocrine cells to protect the esophagus from reflux

100. Thick viscid mucous
101. Meissners Plexus, submucosa
102. 3 layers instead of 2 : outer longitudinal, middle circular, and inner oblique
103. Myenteric Plexus (Auerbach's)

SMALL INTESTINE

104. Small intestine
105. Submucosa, duodenum
106. Submucosa, ileum
107. Random forming immune cells and lymphatic nodules found in the small intestine
108. Mucosa, villa
109. Vavulate conniventes, plica circularis, or valves of Kerckring
110. Enterocytes, Simple columnar
111. Goblet cells, 5-6 days
112. Glycocalyx
113. Enterokinase, turns tryposinogen into trypsin
114. Carbohydrates and proteins
115. Lamina propria
116. Smooth muscle cells and myofibroblasts
117. Central lacteal and capillaries
118. Intestinal glands, tubular glands
119. Paneth cells, zinc and acidophilic granules which are phagocytic
120. Lamina propria
121. EC, G, I, K, S
122. Modified enterocytes covering the lymphatic follicle, no
123. CCK, gall gladder emptying
124. GIP, antagonist to gastrin
125. D cells
126. Secretin, pancreatic secretion
127. Stem cells
128. Neutralize acidic chime, protect the proximal small intestine from digestive bile
129. Urogastrone, enhance epithelial cell division, inhibit HCL secretion
130. Zollinger Ellisonn Syndrome
131. Gastrin and HCL production, parietal cell stimulation
132. Pancreatic Gastronoma
133. The duodenuem

134. Pancreas

LARGE INTESTINE

135. Colon
136. Villi
137. Crypts of lieberkuhn, columnar, goblet, enteroendocrince, tufts, and stem cells
138. Collagen table, Collagen fibers and proteoglycans
139. Gut Associated Lymphatic Tissue
140. Regulates flow of water and electrolytes from extracellular to vascular compartment
141. Muscularis mucosa, Lamina propria
142. Since there are no lymph vessels in the lamina propria
143. Nothing! Ha!
144. Teniae coli
145. Condensations of the teniae coli
146. Also nothing! Double HA!
147. A ring of lymphoid tissue in the lamina propria with all four layers of its own
148. Simple columnar, stratified squamous

THE LIVER

149. Liver
150. Exocrine, endocrine, & endocrine like functions
151. Exocrine
152. Detoxifies, digestion and absorption of lipids
153. Carry conjugated waste products
154. Fibrinogen, albumin, nonimmunoglobulins, prothrombin, and glycoprotein
155. 25 Hydroxycholecalciferol
156. Triidothyronine
157. Glisson's capsule, lobules
158. Classical lobule, portal lobule, and liver acini
159. Hexagonal, anastomosing plates of hepatocytes
160. Hepatic
161. Central vein, liver sinusoids
162. Portal triad: portal vein, branch of the hepatic artery, branch of the bile duct
163. Exocrine (bile)
164. Triangular, portal triad, 3 adjacent classical liver lobules.
165. Bile ductules

166. Diamond shaped, smallest functional unit
167. 2 portal triads, 2 central veins
168. Vascular perfusion
169. Z1, close to portal triad : Z2, middle : Z3, close to central vein
170. 3,2,1
171. 1,2,3
172. Centriole Lobular Necrosis
173. Branches of the hepatic artery and portal vein
174. Central vein, sublobular, hepatic vein
175. Endothelium, Kupffer's cells, phagocytic
176. Discountinous
177. IVC
178. Perisinusoidal space
179. Space of mall
180. Space of Disse
181. Endocrine secretion of protein and lipoproteins of the liver into the blood vessel
182. Ito cells, store Vitamin A
183. Lies between the portal canal and outer most hepatocytes
184. One or two
185. Bile canaliculi
186. Canal of Hering, portal canal
187. Bile salts, cholesterol, lecithin, and electrolytes
188. Emulsify fat and aid in absorption of fatty acids
189. Glycogen
190. Protein into fat, nonessential aminos into essentials, and aminos into glucose
191. Immunoglobulins
192. Carbohydrates and proteins
193. Neutral fat
194. Bile salts

GALL BLADDER & PANCREAS

195. 30 to 50 ml
196. Hormones
197. Simple columnar cells with apical microvilli, folds
198. Highly cellular, mitochondria
199. A Muscularis mucosa

200. Rokitanski Aschoff sinuses
201. Bacteria can accumulate resulting in chronic inflammation
202. Exocrine
203. Trypsinogen, pepsinogen amylase and lipase.
204. Inactive
205. Centro acinar cells
206. Intercalated -> intralobular -> interlobular -> main pancreatic
207. CCK and secretin
208. A, B, D
209. Stimulates the secretion of proenzyme by acini
210. Stimulates the duct to secrete bicarbonate
211. Islets of Langerhans
212. 70%, central position, insulin
213. 20%, periphery, glucagon
214. 10%, periphery, somatostatin
215. Figure I

SKIN

216. Epidermis, dermis, hypodermis, appendages, cells, glands
217. Skin covering palms of hands and soles of the foot, lack of hair follicle
218. Eyelids, prepuce, etc., lack of hair follicle
219. Keritinized stratified epithelium
220. Dense connective tissue
221. Loose connective tissue, heavy amounts of adipose
222. Formation of epidural & dermal ridges or papillae
223. S. Basale, Spinosum, Granulosum, Lucidum, Corneuum
224. Stratum Basale/Geminativum, Columnar cells
225. Stratum Spinosum
226. Stratum Granulosum
227. Stratum Lucidum
228. Stratum Corneum, Many layers of keratinized dead cells
229. Keratinocytes
230. 90%, keratinocytes, stratum basale
231. Merkel cells, melanocytes
232. Protect skin from ultraviolet light and provide color
233. Vitamin D and prostaglandins

234. The extracellular water barrier produced by the keratinocytes
235. Pacinian Corpuscle
236. Mechanoceptros for pressure, course touch and vibration
237. Thin, concentric lamellae: Pacinan Corpuscle
238. Stratum basale
239. S. Spinosum
240. Stratum Malpighii
241. Abrasion
242. Barrier to penetration of foreign materials and sealing effect
243. Langerhans, Melanocytes, Merkel cells
244. S. basal, S. granulosum, S. corneum
245. 2 to 4 weeks
246. Keratinization
247. The produced proteins kills them
248. Lips and finger tips, tactile
249. Antigen presenting cells, macrophages
250. Between the basal cells with long dendrites reaching the spinosum
251. Hair follicles, hair, sweat glands, sebaceous glands
252. Germinal matrix in the bulbous core
253. Skin surface and germinal matrix
254. Soft keratin
255. Between .3mm to 3.0mm
256. True
257. Lymphocytes, mast cells, and fibroblasts
258. Upper papillary layer, lower reticular layer
259. Adipose
260. Loose CT, rich capillary network
261. Dense CT
262. Where glands and hair follicles extend through it
263. Lower reticular dermis and hypodermis, Systemic diseases
264. Holocrine
265. Opening into the sides of hair follicle, sebum(oil)
266. They become the secretion
267. Everywhere except the lips and external genitalia
268. External genitalia and armpits
269. Large secretory part, hair follicle

270. Odor, sexual character
271. Small secretory part, long helical duct, opens onto the surface
272. Thermoregulation
273. Errector pili muscle
274. Meissner's Corpuscle, Pacinian Corpuscle, Ruffini Corpuscle, and Krause End Bulbs
275. Free nerve endings
276. Water evaporation
277. Oil secretion
278. Cold sensations
279. Touch, pain, and temperatue : dermis-epidermal junction
280. Unmyelinated
281. Light touch
282. Schwann cells, dermis (fingertips, soles, nipple, genitalia, lips)
283. Fibroblasts
284. Mechanoreceptors for pressure, course touch, and vibration
285. Pressure, touch and heat
286. In joints and the dermis
287. Refer to Figures II, III, IV, V for receptors

NUCLEUS

288. Perinuclear space
289. Lipid bilayers
290. Outer membrane, contiguous
291. Highly selective holes in the nuclear envelope
292. Central cavity, aqueous channel
293. Transporter subunits
294. GTP->GDP
295. Male pattern baldness, gout, and color blindness
296. Mom
297. Histone and non-histone
298. Enzymes (polymerase, RNA polymerase)
299. Heterochromatin and Euchromatin
300. Euchromatin, dispersed
301. True
302. Highly condensed, transcriptionally inactive
303. Period between mitotic division

304. Displayed fully condensed metaphase chromosomes
305. Determining genetic abnormalities
306. G-banding pattern, the stain
307. A-G, largest to smallest
308. Trisomal 21 chromosome
309. Turner's Syndrome (sterile infantile female)
310. Kleinfelter's Syndrome (infantile male and female)

CELL REPRODUCTION MITOSIS

311. Period between the existence of a cell to the instant it forms two daughter cells
312. Cyclins & Cyclin dependent kinases
313. Period of normal metabolic activity
314. S phase
315. G-phase, S-phase
316. G and s phase's combined
317. The site where replication begins
318. Many
319. DNA
320. Period of mitosis
321. Karyokinesis
322. Spliting of the cell into two daughter cells
323. Prophase, metaphase, anaphase, telophase
324. A protein meshwork
325. Depolymerized by lamin kinase breaking it into smaller vesicles
326. Chromosomes
327. Centromere, kinetochore, telomere
328. Telomere
329. Centromere
330. Kinetochores
331. During the Metaphase, Plate configuration
332. Equator of the spindle
333. Segregation of chromosomes into daughter cells
334. ATPase
335. Microtubules
336. Spindle microtubules, centrosome, and kinetochore
337. Nucleating microtubule growth

338. Centriole pair and pericentriolar material
339. 2
340. Opposite sides of the nucleus to serve as mitotic spindle poles
341. During Anaphase
342. Protein in kinetochore contains ATPase for breakdown and separation
343. Activated lamin phosphatase
344. Chromosomes, chromatin, mitotic apparatus
345. Smooth muscle contraction, Cytokinesis

RESPIRATORY

346. Conducting parts, respiratory parts
347. Nare, choanae
348. Transmission of air to and from lungs, conditions inspired air
349. Main site of gas exchange
350. Nasal cavities, nasopharynx, larynx, trachea, bronchi, bronchioles to terminal bronchiole
351. Respiratory bronchioles, alveolar ducts, alveoli
352. Vestibule, Olfactory region/mucosa, Respiratory region/mucosa
353. Olfactory mucosa, smell
354. Olfactory epithelium, Olfactory receptor, sustentacular, and basal cells
355. Bipolar, olfactory nerves
356. Support the olfactory receptors
357. Produce new olfactory cells
358. Pseudostratified ciliated columnar, goblet cells, serous and mucous glands
359. Highly vascularized, warm
360. Make air moist
361. Trap dust
362. Trachea
363. Interlacing smooth muscle and fibroelastic CT
364. Dense fibroelastic CT, flexibility
365. Mucosa, submucosa, cartilage, and adventitita
366. PSCC, Goblet, Brush, Basal, Neuroendocrine
367. Pseudostratified ciliated columnar epithelium
368. Brush cells, receptor cells that monitor lung air quality
369. Kulchitsky cells, hormone-like substances
370. Lymphocytes, Plasma cells, Eosinophils, Mast cells, fibroblasts, and lymphoid tissue
371. Elastic membrane

372. Lymphatic tissue, Blood and lymphatic vessels, and mucous glands and duct
373. Perichondrium, trachealis
374. Pseudostratified columnar ciliated epithelium
375. Discontinuous cartilage plates
376. Submucosa with glands
377. Ovid
378. Round (plates, no rings)
379. Simple cubodial nonciliated, narrow
380. Alveoli
381. Smooth muscle
382. Goblet cells, glands, and cartilage
383. Air spaces, ducts and sacs : Alveolar septum
384. Type I Pneumocyte, Type II Pneumocyte
385. Tight junctions
386. Simple squamous, cubodial secretory (secreting surfactant)
387. Serous membrane, Visceral and parietal, simple squamous
388. Alveolar epithelium, capillary endothelium
389. Dust Cells

MEIOSIS

390. Reductive division resulting in 4 genetically distinct haploid gametes (4)
391. Distinct
392. Chromosomes between maternal and paternal chromosomes of homologous pair
393. Independent assortment, 2^n different types (n = number of chromosomes)
394. Two diploid (genetically different) progeny cells
395. Meiosis II, Mitosis
396. Oogenesis, in utero
397. Primary oocytes
398. Prophase of Meiosis I, sexual maturity, ovulation
399. Primary, asymmetrical, all the cytoplasm
400. Secondary Oocyte, polar body
401. Cytostatic factor
402. Upon fertilization, cytostatic factor is destroyed by increase in calcium concentration
403. Mature fertilized egg, polar body
404. Spermatogenesis
405. Fallopian tube (oviduct), uterus

406. Seminiferous tubules of the testes, puberty till death
407. Spermatids
408. 4
409. Seminiferous tubules : shed cytoplasm, condensed nucleus, and adds flagellum
410. Uterus and oviduct, Capacitation, 5-7 hours
411. Acrosomal Reaction
412. Actin, phosphorylase and kinase reactions
413. Species specific molecules, zona pellucid
414. Fast, calcium
415. Digestive enzymes
416. Cortical granules
417. Increases intracellular calcium so Meiosis II can complete and closes off zona pellucida
418. Zygotic embryo