

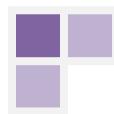
KRS STUDY GUIDES : Quiz Answers : Sarkar : "Do you know what humoral refers to? Making humors!"

ENDOCRINE BASICS

1. Are not lipid soluble, so cannot pass through the membrane
2. Ductless glands
3. Concentration at the receptor site
4. Steroids and thyroid hormones :: Cytoplasmic binding proteins
5. Hypothalamus
6. Releasing hormone, inhibitory hormones
7. Stimulating hormone :: Target gland hormone
8. Negative
9. Estrogen inhibits GnRH of hypothalamus and FHS and LH of Anterior pituitary
10. Protein hormones :: Insulin, corticotropins, catecholamines
11. Protein bound form, rarely as a free hormone (no binding)
12. Steroids, androgens, estrogens, progestins, glucocorticoids, mineralocorticoids, thyroid H's
13. DNA, transcription, translation
14. Receptor active → 2° messengers → Phosphorylation via Tyrosine Kinase → Response
15. cAMP, cGMP, NO, Ca, IP3, DAG
16. ADH and Oxytocin
17. TSH, ACTH (Adrenocorticotropin), GH, FSH, LH, PRL (Prolactin)
18. Hypophyseal blood vessels
19. Hypothalamohypophyseal nerve tract
20. Hypothalamic neurons are electrically stimulated
21. Median eminence and tuberculum
22. Integrating center
23. Periventricular, medial, and lateral :: afferent and efferent connections
24. Ant/Post Pituitary, superior colliculi, substantia nigra, and cerebellum
25. Thalamus, reticular formation, limbic system, eyes, neocortex
26. Hypothalamic regulatory center
27. NE, Ach, Dopamine, GABA, Opioids, Endorphins
28. Anterior (receives stimulation by vessels, posterior receives direct nerve impulse)
29. Temp, Energy needs, and fluid balance

HORMONES

30. Gonadotropes, Somatotropes
31. Contraction of uterine smooth muscle & milk release
32. Mammary glands :: Prolactin inhibitory hormone/factor (PIF)
33. Stimulates thyroid to produce TH which regulates BMR :: Thyrotropin-releasing hormone (TRH)



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34. Adrenal cortex to release cortisol :: Corticotropin-releasing hormone (CRH)
35. Controls Gonads and gonadal hormones :: Gonad-releasing hormone (GnRH)
36. Melanocyte-stimulating hormone (MSH)
37. TRH, GRF (Growth hormone releasing hormone/factor), GnRH, Somatostatin, PIF, Substance P
38. Proopiomelanocortin (POMC) is cleaved into ACTH and other hormones
39. Somatotrophs
40. Blood serum, adolescence
41. Liver :: Somatomedin-C
42. Tissue repair, muscle/bone growth/strength, energy, metabolism, mental health
43. Insulin-Like Growth Factor-I
44. ↑ amino acid uptake, ↑ protein synthesis, ↓ oxidation of proteins
45. ↑ triglyceride breakdown, ↑ oxidation in adipocytes
46. Maintain blood glucose, ↓ insulin activity
47. Alveoli (Lobuloalveolar growth)
48. Cortisol & Insulin
49. Autocrine or paracrine modulator, lymphocytes produce it, immune cells have receptor for it
50. Thyrotrophs, 13 weeks of gestation
51. TRH increase secretion of TSH, while Thyroid hormones decrease secretion of TSH
52. cAMP
53. Growth and differentiation of thyroid gland
54. Uptake of iodide, organification, release of thyroid gland products
55. Glucocorticoids (ex. cortisol), aldosterone
56. Corticotropin-releasing hormone (CRH), Corticotrophin, stress
57. Plasma membrane receptors
58. MSH, α-MSH
59. Stimulates growth of specific zones of the adrenal cortex
60. ↑ skin pigmentation
61. Melanocytes, melanin granules
62. Plasma membrane, cAMP, Tyrosine Kinase
63. Vasopressin, nine amino acid peptide
64. Neurophysin, Neurophysin
65. By conserving body water, makes tubules permeable to water
66. Aquaporins :: ↓ Plasma osmolarity, ↑ Urine osmolarity (more solutes, less water)
67. Ant Pituitary, Ovaries, and testes, (also some cortices of the brain)
68. Myoepithelial cells (smooth muscle cells that surround the mammary alveoli)
69. Increased oxytocin receptors

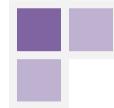


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70. When fetus stimulates cervix/vagina, enhances contraction in a positive feedback loop
71. Maternal behavior establishment

THYROID & PARATHYROID GLAND HORMONES

72. Thyroxine, DIT + DIT
73. Active, Triiodothyronine, DIT + MIT
74. Thyroid gland, isthmus
75. Glycoprotein Thyroglobulin, Iodine compounds (Thyroxine, Triiodothyronine)
76. Thyroglobulin + iodine, lumen of follicles, Thyroid hormone
77. Parafollicular or C cells
78. Lowers, parathyroid hormone (PTH)
79. As Ca concentration in the blood decreases, Calcitonin secretion decreases
80. Glucose oxidation, ↑ BMR, ↑ Heat, ↑ Oxygen consumption
81. Maintain BP, Regulate Tissue Growth, Develop Skeletal and nervous systems, reproduction
82. Thyroid Insensitive/Unresponsive Tissue
83. Adult brain tissue
84. ↑ Mitochondria, ↑ NaKATPase, ↑ Respiratory enzymes
85. Fetal/neonatal brain dev, n. prolif. & diff., Myelinogenesis, n. outgrowth, Synapse formation
86. Shunted growth
87. BMR, ATP synthesis
88. BMR decreases
89. Mitochondria swell and oxidative phosphorylation uncouples leading to more heat & less ATP
90. ↑ Electrolyte transport across membranes
91. Na/K ratio decreases (ex. 2/4 = .50, 2/8 = .25)
92. Na⁺K⁺ATPase
93. ↑ new protein synthesis, ↑ existing protein degradation
94. An overall increase in enzymes
95. Rapid uptake of glucose, ↑ glycolysis, ↑ gluconeogenesis, ↑ rate of GI absorption, ↑ insulin
96. Lipogenesis (more lipids, triglycerides), lipase activity
97. Increase lipoprotein lipase concentration
98. Increases, Increases
99. Yes, but the effects are transient
100. RNA & DNA synthesis for new protein formation
101. Sympathetic β-adrenergic receptor
102. Atrial natriuretic hormone
103. Gonad and spleen

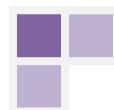


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104. TR α & TR β
105. Iodothyronines
106. Cell nuclei, nerve terminals
107. Low thyroid hormone levels due to iodine or TRH deficiency
108. Excessive TH release :: form of thyrotoxicosis
109. Graves disease, toxic multinodular goiter, and thyroid cancer
110. Inappropriate nervous system development
111. Excessively large thyroid
112. ↑ proteins and mucopolysaccharides separate connective tissues of dermis
113. Development of Thyroid autoantibodies and/or thyroid stimulating immunoglobulins
114. ↑ autonomously functioning follicles producing excessive TH
115. Anxiety, Lethargy, Nervousness, Irritability, Seizures, Insomnia, Labile emotions, Coma
116. Oxyphil, Chief cells
117. Parathormone (PTH), calcium blood balance
118. ↑ Osteoclast activity, ↑ Reabsorption of Ca & ↑ phosphate secretion in Kidneys, ↑ GI absorp
119. Mineralcorticoids (1° aldosterone)
120. Glucocorticoids (1° cortisol)
121. Gonadocorticoids (1° androgens)
122. Nervous, Sympathetic nervous system
123. ↓ Na excretion, ↑ Na re-absorption, ↑ secretion of K
124. ↑ blood K, ↓ blood Na, ↓ Blood volume & BP
125. Atrial natriuretic peptide
126. ACTH
127. Renin-angiotensin mechanism
128. Stress :: Keep blood sugar levels constant, Maintain blood v. & prevent water shift into tissues
129. Gluconeogenesis, blood glucose, fatty acids, amino acids
130. Onset of puberty, secondary sex characteristics, sex drive
131. Testosterone
132. estrogen
133. Chromaffin cells; stress hormones (NE & epinephrine)
134. Heart, metabolic activities
135. Peripheral vasoconstriction, BP

PANCREAS, GONADS, PINEAL, THYMUS

136. α-cells (glucagon), β-cells (insulin)
137. hyperglycemic, liver

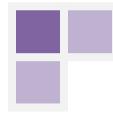


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138. Glycogenolysis, Gluconeogenesis, release of glucose into blood
139. Insulin
140. Tyrosine kinase enzyme
141. ↓ b. glucose, ↑ transport glucose into cells, counter metabolic activities that raise b. glucose
142. ↑ oxidation of glucose for ATP, Glycogen formation, Convert glucose into fat
143. Polyuria, polydipsia, and polyphagia
144. Excessive insulin production, hypoglycemia
145. Estrogens and progesterone
146. Melatonin :: circadian rhythms, rhythmic physiological processes (temp, sleep, appetite)
147. Maturation of reproductive organs, 2° sex characteristics, breast development & cyclic changes
148. Thymopoietins & Thymosins :: development of T lymphocytes

REPRODUCTION

149. Germ, sertoli, leydig (testosterone)
150. Anti-mullerian hormone; produced during embryogenesis to prevent uterus, etc...
151. Epididymis → ductus deferens → ejaculatory ducts → urethra
152. Seminal vesicles, prostate gland, bulbourethral glands
153. Store, produce
154. Tubulus rectus, rete testis
155. Bulbourethral glands; produce mucous to neutralize the acids of the urethra
156. Germ, theca, and granulosa
157. Oogonia (become oocytes)
158. Progesterone
159. Estradiol (with aid from theca cells)
160. Contains cilia that draw in the ovulated eggs from the ovarian follicles
161. Perimetrium (connective tissue), Myometrium (smooth muscle), Endometrium (Hormone-responsive epithelial)
162. Vagina, uterus, & fallopian tubes
163. Phenotypic sex
164. Ach, NO, and VIP
165. SNS, NE
166. Prostate, seminal vesicles, vas deferens, and epididymis
167. Fallopian tubes, uterus, and upper 1/3 of vagina
168. Wolffian ducts (male specific)
169. Dihydrotestosterone (converted testosterone) & androgen receptors on target tissue
170. Mullerian ducts develop into female internal & external genitalia
171. Normal levels of estrogen

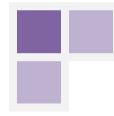


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172. May lead to male phenotype (only if during differentiation stages)

GAMETOGENESIS

173. Mitosis (spermatogonia → spermatocytes), meiosis (spermatocytes → spermatids), spermiogenesis (spermatids → sperm)
174. Haploid, 23
175. Half, 4
176. Spermatogonia
177. Type A & Type B
178. Remain at basement membrane, maintain germ line
179. Moving toward lumen, become primary spermatocytes
180. Secondary spermatocytes
181. Spermatids
182. The sperm has no excess cytoplasm & contains a flagella
183. Acrosome head with hydrolytic enzymes
184. Mitochondria spiraled around the tail filaments
185. Extending from basal lamina to the lumen of the Seminiferous tubule (ST) :: blood-testis barrier
186. Spermatogonia and primary spermatocytes
187. Androgen-binding protein, testosterone
188. The actual lumen & meiotically active cells
189. FSH, sertoli cells
190. Production of inhibin
191. At 5 months of gestation when germ cell multiply, no more are every produced
192. Primary Oocytes, prophase I
193. 400, apoptosis
194. Primary oocytes & follicle cells
195. FSH, granulose cells
196. When vesicles fuse forming an atrum
197. Completes Meiosis I, divides into a full cytoplasm cell and a degenerative polar cell
198. Metaphase II of Meiosis II, fertilized
199. Cumulus oophorus, Secondary Oocyte
200. Corona radiata, zona pellucida
201. Barrier to sperm penetration
202. 1, atretic
203. Increasing levels of estrogen, egg
204. Dies (must be fertilized within 2 days of release)



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ENDOCRINE REGULATION OF REPRODUCTION

205. Gonadotrophin releasing hormone (GnRH) → FSH → Sperm & Inhibin
206. GnRH → LH → Testosterone
207. Testosterone secretion
208. Anabolic steroids
209. Testosterone
210. Paracrine role
211. Corpus luteum, luteal phase
212. Progesterone & Estrogen :: corpus albicans
213. Day 1-13, FSH (stimulates follicle to secrete estrogen and progesterone)
214. Day 14
215. Luteal phase; corpus luteum secretes progesterone & estrogen
216. Estrogen & progesterone
217. Days 1-5, low levels of estrogen & progesterone
218. Days 6-13, endometrium thickens due to estrogen & ovulation occurs
219. Secretory phase; further thickens, becomes vascular due to progesterone
220. Fallopian tube, endometrium
221. Human Chorionic Gonadotropin (HCG); prevents degeneration of corpus luteum & uterine lining

