Practice Quiz Questions : Dr. Balliett : "You haven't been eating your flaxseed oil have you?"

BIOSYNTHESIS OF CHOLESTEROL

1. Cholesterol is a precursor of _____, _____, & _____.
2. Cholesterol is found in mammalian _____.
3. What are the disorders of cholesterol metabolism?
4. 50% of our cholesterol is from our diet; cholesterol can only be consumed from _____.
5. What is the primary site of cholesterol synthesis? What also makes it?
6. What is the energy cost of cholesterol production?
7. What is the acronym for the stages of Cholesterol synthesis?
8. When is cholesterol produced?
9. Where does stage one occur?
10. Mevalonate forms _____ units, the final compound then is _____.
11. To spend an ATP you need _____.
12. Stage 2 is a precursor to forming _____, aka _____.
13. _____ is a linear molecule capable of folding into a ring?
14. Where is the enzyme of stage 3 found?
15. Condensation of _____ form squalene.
16. Squalene forms what ring compound in stage 4?
17. How do you inhibit HGM-CoA reductase?
18. What increases the activity of HMG-CoA reductase?
19. Lanosterol to cholesterol occurs when bound to a _____ and _____.
20. Lanosterol to cholesterol occurs via the loss of _____ and _____.
21. In simplistic terms, what increases intracellular cholesterol?
22. In simplistic terms, what decreases intracellular cholesterol?
23. A no fat diet results in _____ cholesterol synth. A low fat diet results in _____ cholesterol synth.
24. What percentage of calories should be from cholesterol to lower de novo biosynthesis?
25. What lifestyle factors raise blood cholesterol?
26. What lifestyle factors elevate FFAs?
27. What class of drugs lower cholesterol and how do they work?
28. Give 3 examples of statins.
29. Since statins also inhibit _____, 100mg of this coenzyme is needed in your diet.
30. What is the most quantitatively important metabolic product of cholesterol?
31. What are the two primary bile acids?
32. What is the regulatory enzyme of bile acid synthesis?
33. What are the coenzymes of micosomal 7 alpha hydroxlase?
34. _____ secretes bile from the liver to the gall bladder, while _____ empties the gallbladder.
35. Bile acids, which are an _____, enter the GI tract at the _____.

36. 30g of bile acids pass into the intestines in a day, of which ___% are reabsorbed into the _____.
37. Since cholesterol cannot be _____, it must be removed via _____.
38. How does Vitamin C reduce cholesterol?
39. How does Oat Bran reduce cholesterol?
40. How much cholesterol is excreted in a normal day and in what forms?

NUCLEOTIDES

41. What are the forms of cellular energy? What are they collectively known as?
42. _____ reutilize already made nitrogenous bases and nucleosides and occurs in the ____.
43. What 3 things make a nucleotide?
44. What 2 things make a nucleoside?
45. What are the Freebases? (Name their respective nucleoside too if not sharing the same root word)
46. What are the nitrogenous bases?
47. Inosine Monophosphate (IMP) → _____, which forms which freebases?
48. IMP has 4 nitrogens; where do they originate?
49. IMP has 5 carbons; where do they originate?
50. What are the important molecules of Purine synthesis?
51. How many steps of Purine synthesis require ATP and Mg?
52. What does PRPP stand for and what does it require to produce Purines?
53. What is the pathway for IMP to AMP? Include what is added and released.
54. What is the pathway for IMP to GMP? Include what is added and released.
55. What are the purines?
56. What are the pyrimidines?
57. What is APRT? What is HGPRT?
58. Learn the Salvage Pathway Supplement.
59. What tissues have little or no PRPP aminotransferase?
60. What are the x-linked recessive disorders of purine degradation?
61. What is the glycogen storage disorder of purine degradation? What is it a deficiency of?
62. Gout is an enzyme deficiency of _____ or _____ or _____.
63. What occurs in gout?
64. What is a type of gout where the deposition occurs in the big toe?
65. What drug treats gout and how does it work?
66. What type of nutritional management should occur to treat gout?
67. What is Lesch-Nyhan syndrome an enzyme deficiency of? What are the symptoms?
68. LN syndrome causes increased _____ and thus increased _____.
69. What does Von Gierke's increase?

70. Pyrimidines are synthesized from _____.
71. What can UMP be converted into?
72. Where does the nitrogens and carbons come from in UMP?
73. How does Adenosine get to Xanthine?
74. How does Guanosine, get to Xanthine?
75. What enzyme is needed to convert Xanthine into Uric Acid? What is it dependent on?
76. What things may regulate hepatic purine nucleotide synthesis?
77. What are the important molecules in Pyrimidine Synthesis?
78. What molecule in Pyrimidine synthesis release a water in its creation?
79. Refer to the *Pyrimidine Synthesis supplement*.
80. What is N^5N^{10}MethyleneH$_4$folate an active form of, its function, and what it requires.
81. How do cancer drugs work?
82. _____ is a suicide inhibitor of _____.
83. To salvage pyrimidines, Uricil + _____ → _____ + _____.
84. To salvage pyrimidines, Thymidine + _____ → _____ + _____.
85. The degradation of pyrimidines is essentially the _____, and all products are _____.
86. Which purines or pyrimidines may be used to in the formation of Deoxynucleotides?
87. In the formation of deoxyneucleotides NDP is converted into dNDP by what enzyme?
88. What is the Mole of mole synthesis of Pyrimidines to purines?
89. What is the common site of pyrimidine synthesis control?

PROTEIN SYNTHESIS

90. Simply, what is transcription and what is its steps?
91. DNA is to Code. mRNA is to _____. tRNA is to _____.
92. What is the start codon?
93. Where does transcription occur?
94. What is the enzyme of transcription and where does it bind?
95. How is the DNA template read?
96. RNA polymerase _____ DNA.
97. mRNA is formed on the _____ from _____ to _____ during elongation.
98. When does transcription termination occur?
99. Protein coding segments of genes _____ to each other.
100. What are introns?
101. What is the portion of DNA that codes for proteins, or the expressed region?
102. What occurs to prevent the breakdown of mRNA?
103. A Poly-A tails consists of _____.

104. Preventing the breakdown of mRNA is also known as _____.
105. mRNA enters the _____, thus allowing translation to occur on the _____.
106. What occurs at the A-site of a ribosome?
107. What is the P-site of a ribosome?
108. What attaches each amino acid to the tRNA acceptor stem?
109. What protein promotes the association of small ribosomal units attaching to mRNA?
110. What are the steps of Translation Initiation?
111. What is required by all the steps of translation?
112. During elongation, what stimulates the next tRNA to add at the new A-site?
113. During elongation, the previous tRNA _____ while the ribosome _____ the mRNA strand.
114. Repetition of the elongation steps results in the production of a _____.
115. How does translation terminate?
116. How may a protein be freed?

PROTEIN TRAFFICKING

117. Free ribosomes synthesize _____, _____, & _____.
118. In an active mRNA, many _____ may be _____ at once.
119. Polysomes attached to endoplasmic reticulum produce _____ & _____.
120. Polysomes that are free in the cytoplasm produce _____.
121. Proteins destined for organelle membranes contain a _____. Describe it.
122. What is the signal recognition particle (SRP) composed of.
123. What does SRP do?
124. The SRP receptor is an _____ protein that requires _____.
125. Because SRP binds to the SRP receptor, what is the effect of the receptor on translation?
126. The SRP receptor also allows a _____ to be inserted through the _____. This is called _____.
127. What are the basic types of membrane proteins?
128. How may a protein be modified?
129. For chealting calcium, Glutamate may be modified into _____.