

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

GLYCOGENESIS, GLYCOGENOLYSIS, GLUCONEOGENESIS

1. What two things in the body have absolute requirements for blood glucose?
2. Although both the liver and muscle store _____, which supplies the brain?
3. What allows glucose to enter/exit the liver? Is it insulin dependent?
4. The inducible Glucokinase increases in activity after a _____ meal.
5. Glucose entering the liver replenishes _____.
6. What often occurs after glucose enters the liver?
7. What is the allosteric enzyme of glycogenesis? What is it activated by?
8. What allows glucose to enter muscle tissue? Is it insulin dependent?
9. Insulin via _____ activity turns off _____, activates _____, and stimulates _____.
10. What acts in opposition to insulin
11. What does glycogen phosphorylase need to move 1,6 linkages to ____ so that it may work?
12. What is the initiator, source, and effect on glycogenolysis of Glucagon?
13. What is the initiator, source, and effect on glycogenolysis of Epinephrine?
14. What is the initiator, source, and effect on glycogenolysis of Cortisol?
15. What is the initiator, source, and effect on glycogenolysis of Insulin?
16. What activates Glycogenolysis in the muscle for prolonged exercise & flight/fight response?
17. What activates phosphorylase kinase?
18. Increased levels of cAMP also relieves the inhibition of _____.
19. What activates glycogenolysis?
20. When does gluconeogenesis occur?
21. What does gluconeogenesis require? What supplies them?
22. Glucose can be produced from Amino acids from _____.
23. What are the other two sources of glucose formation?
24. What enzyme of gluconeogenesis account for the 4 needed ATPs?
25. What are the 4 unique enzymes of the irreversible steps of gluconeogenesis?
26. What can leave the mitochondria?
27. What is a unique allosteric enzyme of gluconeogenesis and what does it require?
28. What stage of glycolysis is irreversible?
29. What is required for OAA to go to PEP? What is released?
30. Where is G6Pase found and what does it do?
31. What enzyme is required to turn glycerol into G3P?
32. Hormonal increasing of gluconeogenesis occurs via _____ and _____.
33. Mitochondria releases Acetyl CoA via _____ resulting in _____ and _____.
34. Since fructose enters glycolysis at the triose phosphate, it _____, _____, and _____.



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LIPID OXIDATIVE METABOLISM

35. Catabolism is entirely _____ and thus termed _____.
36. _____ releases fatty acids from adipose and requires _____.
37. What are the end products of beta-oxidation?
38. Acetyl CoA formed in the liver becomes _____ and then is _____.
39. Acetyl CoA formed in the muscle enter the _____ and becomes _____.
40. How are fatty acids transported?
41. Fatty acids are activated to CoA via what enzyme and requires what?
42. Where does it occur and what enzyme is needed for the carnitine shuttle?
43. Fatty acid thiokinase is also known as _____.
44. What does the Carnitine shuttle allow for?
45. Carnitine is _____, thus using the name we know its made from _____ and _____.
46. If _____ puts FAs into carnitine, _____ recycles them back.
47. What are the four enzymes of beta-oxidation and what each require.
48. Palmitic acid has ___ carbons; stearic ___; aracidic _____.
49. What occurs during fasting?
50. Ketone bodies (Acetoacetate, Beta hydrobutyrate, Acetone)
51. To export ketone bodies to peripheral tissue _____ and _____ are required.
52. Ketone bodies may be metabolized by skeletal and cardiac muscle but requires _____ and _____.
53. The brain uses ketone bodies for ___% of its energy, but only during _____.
54. When does glucagon activate lipolysis?
55. When does Epinephrine activate lipolysis?
56. When does Cortisol activate lipolysis?

FATTY ACID SYNTHESIS

57. Where does De Novo synthesis of fatty acids occur?
58. Fatty acid synthesis occurs in the _____ via the _____.
59. What takes Acetyl CoA out of the mitochondria?
60. Where is NADPH acquired for the malate shuttle?
61. What does the enzyme ATP citrate lyase do?
62. Why is Malonyl CoA a unique fatty acid?
63. _____ + _____ → Malonyl CoA in stage 1.
64. What is required to produce Malonyl CoA?
65. What is required to activate Acetyl CoA carboxylase?
66. What up-regulates AceCoA carboxylase?



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67. What does a ketogenic diet do?
68. What inhibits Acetyl CoA carboxylase?
69. Fatty acid synthase has ___ enzymes and is dimer that contains an _____ protein.
70. To produce 1 palmitate you need ___ AceCoA and ___ malonyl CoA thus releasing _____.
71. To produce Malonyl CoA you need an ATP, thus how may ATP are needed in Palmitate synth?
72. 2NADPH are needed per Malonyl, thus how much NADPH is needed and what is released by it?
73. In general terms, what inhibits fatty acid synthase?
74. The long chain fatty acids (___c), except for ___ are produced by FA elongation with _____.
75. Where does FA elongation occur, what is its enzyme, substrate, and dependence?
76. The short chain FAs have how many carbons?
77. Since short chain production occurs in the mitochondria, the substrate is naturally _____.
78. Since long FAs are produced by elongation (beta-synth), how are short/med chains produced?
79. Very long chain FAs (___c) synthesis occurs where and for what purpose?
80. What is the substrate of Very long chain fatty acid production?
81. Essential fatty acids can only be desaturated at what location? What are two EFAs?
82. Conditional fatty acids, such as ___, ___, and ___ need what enzyme?
83. What are fatty acids stored as?
84. What enzyme is used to transfer Glycerol 3P into triglycerides in the liver?
85. What environmental factors lead to increased caloric intake?
86. What enzyme is used to transfer Glycerol 3P into triglycerides in adipose tissue?
87. _____ is a protein produced by white adipose tissue that targets the _____.
88. How does leptin suppress food intake?

MAKE SURE YOU CAN DRAW GLYCOGENESIS, GLYCOGENOLYSIS, BETA OXIDATION OVERVIEW REACTION PAGE 6

