If the reaction A to B has a \( \Delta G \) of 30kJ/mole, what is the \( \Delta G \) of the reverse reaction B to A?

A) Also 30kJ/mole

B) – 30kJ/mole

C) can’t say with this information

D) I do not know
In the conversion of A to B, what happens to the forward ΔG if the concentration of A is increased?

A) ΔG become more positive
B) ΔG become more negative
C) ΔG remains unchanged
D) ΔG is a constant

What type of reaction is this....

A + e⁻ → A⁻

A) oxidation
B) hyrdolysis
C) reduction
D) elimination
E) carbonation
LECTURE 5

Best answer: an enzyme lowers the $\Delta G$ of a reaction compared to that reaction in the absence of enzyme?

A) T
B) F
C) depends on enzyme
If the compound X-PO₄ has a $\Delta G$ of hydrolysis more negative than that of ATP $\rightarrow$ ADP + PO₄, which is true?

A) The X-PO₄ can spontaneously convert ADP into ATP

B) ATP can spontaneously convert X-OH into X-PO₄

C) Both are true

Which of these two images depicts the REDUCED form of NAD-based carrier we discussed in class?

A)

B)
How many ATP are converted to ADP during glycolysis of one glucose?

A) 1 molecule

B) 2 molecules

C) none! ATP is made

D) I still need to read GG&K…
Which is fructose?

A

CH₂OH
C=O
HO-C-H
H-C-OH
H-C-OH
CH₂OH

B

O-C-H
H-C-OH
HO-C-H
H-C-OH
H-C-OH
CH₂OH

How do you pronounce fructose...?

Froooktose
Like
“Hookah”

Fruktose
Like
“Truck”

A

B
How do you pronounce fructose…?

http://dictionary.cambridge.org/us/pronunciation/english/fructose

Best answer: an enzyme lowers the $\Delta G^\ddagger$ of a reaction compared to that reaction in the absence of enzyme?

A) T
B) F
C) depends on enzyme
Clicker!!

LECTURE 7

What is this molecule called?

A) Diphosphoglycerol
B) Glyceraldehyde bisphosphate
C) 1,3 bisphosphoglycerate
D) Fructose bisphosphate
Which enzyme uses this molecule as a substrate in glycolysis?

A) Glyceraldehyde-3P-dehydrogenase  
B) Phosphofructokinase  
C) Phosphoglycerate kinase  
D) Pyruvate kinase

Which enzyme produces this molecule as a product in glycolysis?

A) Glyceraldehyde-3P-dehydrogenase  
B) Phosphofructokinase  
C) Phosphoglycerate kinase  
D) Pyruvate kinase
What is the name of this molecule?

A) succinic acid
B) glutaric acid
C) malonic acid
D) glyceric acid

LECTURE 8
How many carbons does succinic acid (succinate) have?

A) 1
B) 2
C) 3
D) 4
E) 5

How many carboxyl groups does succinate (succinic acid) have?

A) 1
B) 2
C) 3
D) 4
E) 5
How many carbons does glutarate (glutaric acid) have?

A) 1
B) 2
C) 3
D) 4
E) 5

How many carbons are found in an acetyl group?

A) 1
B) 2
C) 3
D) 4
E) 5
How many carbons are released as \( \text{CO}_2 \) during one turn of the Krebs cycle?

A) 1  
B) 2  
C) 3  
D) 4  
E) 5  

Clicker!!
sucnnyl-CoA is a product of which Krebs cycle enzyme?

A) citrate synthase
B) succinate dehydrogenase
C) α ketoglutarate dehydrogenase
D) produce NADPH
E) glyceraldehyde 3P dehydrogenase

In the aconitase reaction, when OH is moved to –CH2- which –CH2 is it…?

A) the one that was most recently in OAA
B) the one that came with the new acetyl
C) both –CH2’s are equally eligible
D) the –CH2 that is part of malate
Which enzyme is most like the PDH complex?

A) αKG dehydrogenase
B) acetaldehyde dehydrogenase
C) pyruvate kinase
D) lactate dehydrogenase

An ester is formed when the following two functional groups form a covalent bond?

A) two alcohols
B) two carboxyl groups
C) an alcohol and a thiol
D) an alcohol and a carboxyl
Clicker!!

No LEC 10
Clicker
questions

Clicker!!

Lecture 11
I thought the exam was…

A) Unfair, and too long
B) Fair and too long
C) Unfair but the right length
D) Fair and the right length

Regarding Electron Transport and Oxidative Phosphorylation, Randy’s independent writing…

A) I have read it all
B) I have read some of it
C) It is on my list
D) It is on my radar
E) I don’t know WTF you are talking about
The proton motive force is not increased by the action of

A) Complex I
B) Complex II
C) Complex III
D) Complex IV

QH$_2$ is...

A) A product of complex 3
B) A substrate of complex 1
C) A substrate of complex 3
D) A carrier of acetyl groups
Lecture 12

Clicker!!

The Fo portion of ATP synthase…

A) has ATP binding sites
B) reacts with cytc_red
C) moves H+ up a gradient with redox energy
D) permits H+ flow across membrane
The $F_1$ portion of ATP synthase...

A) is in the intermembrane space
B) reactions with $O_2$
C) transports $H^+$ across a membrane
D) binds ATP, ADP and $PO_4^{2-}$

Clicker!!

Lecture 14 (no 13)
Gluconeogenesis

A) refers to synthesis of glucose
B) produces ATP
C) occurs when insulin is high
D) only occurs in plants

Fructose-2,6bP

A) is increased when glucose is low
B) increases the rate of gluconeogenesis
C) is a glycolytic intermediate
D) is made by FPK2
Fatty Acid Synthesis

A) requires carboxylation of AcCoA  
B) produces NADH and FADH2  
C) uses NADPH for reductions  
D) Both A and C

The Glyoxylate Cycle

A) releases CO2  
B) is a catabolic cycle  
C) occurs in the human liver  
D) makes a 4C product from a 2C substrate
Glucagon

A) is added to fatty acids to transport them
B) works with insulin in many actions
C) is a derivative of glucose
D) opposes insulin in many actions

Clicker!!

Lecture 16 (no 15)
What is the cognate amino acid of pyruvate?

A) don't know what that is
B) alanine
C) glutamate
D) ornithine
E) gluconate

What is the cognate amino acid of α keto glutarate?

A) alanine
B) glutamate
C) ornithine
D) gluconate
When nitrogen is removed from amino acids during catabolism, it is most often first placed on what molecule?

A) pyruvate  
B) ornithine  
C) α-ketoglutarate  
D) glucose  
E) alanine

Lecture 18 (no 17, 19)
What is the rate limiting enzyme of the urea cycle?

A) Carbamoyl phosphate synthetase
B) Citrate synthase
C) Glutamine amidotransferase
D) Succinate dehydrogenase

Why is citrate lyase a possible target for cancers?

A) It is needed for Krebs cycle
B) It is needed for glucose uptake
C) It is needed for fatty acid synthesis
D) It is involved in programmed cell death
In progeria, what is the best description of what has occurred?

A) The patient has a defect in a gene that normally promotes aging

B) The patient has a defect in a gene that normally promotes longevity

C) The patient is aging fast due to factors distinct from genes