Which of the following cytochromes of the electron transport chain is NOT tightly bound to an integral membrane protein?

|  |  |  |
| --- | --- | --- |
|  |  | a3 |
|  |  | b |
|  |  | a |
| http://owl.cengage.com/owlimages/check.GIF |  | c |

Oligomycin is a macrocyclic antibiotic that inhibits oxidative phosphorylation. It

|  |  |  |
| --- | --- | --- |
|  |  | competes wth O2 for binding to the a3-CuB bimetallic site in complex IV. |
|  |  | collapses the membrane potential. |
|  |  | collapses the proton gradient. |
| http://owl.cengage.com/owlimages/check.GIF |  | inhibits proton flow by binding to the Fo unit of ATP synthase. |

Proton transfer through the Fo subunit of ATP synthase causes a:

|  |  |  |
| --- | --- | --- |
|  |  | O to L conformational change of a β-subunit with synthesis of ATP |
|  |  | O to T conformational change of a β-subunit with synthesis of ATP |
| http://owl.cengage.com/owlimages/check.GIF |  | T to O conformational change of a β-subunit with release of ATP |
|  |  | L to T conformational change of a β-subunit with binding of ADP and P |

In EACH of the two steps of the Q-cycle, when fully reduced coenzyme Q, QH2, is re-oxidized by complex III:  
a. one e- is transferred to cytochrome c1  
b. one e- is transferred to the bL heme  
c. two H+ are released on the cytosolic side of the membrane  
d. one H+ is taken up on the matrix side of the membrane  
e. one e- is transferred from the Qp site on the matrix side to the Qn site on the cytosolic side of the membrane

|  |  |  |
| --- | --- | --- |
|  |  | c, d, e. |
|  |  | a, e. |
| http://owl.cengage.com/owlimages/check.GIF |  | a, b, c. |
|  |  | All of the Above |

If the Fo unit of ATP synthase has the stoichiometry of a1b2c9, how many degrees of rotation of one of the c subunits relative to the α subunit occur with each proton transferred to the matrix?

|  |  |  |
| --- | --- | --- |
| http://owl.cengage.com/owlimages/check.GIF |  | 40 |
|  |  | 360 |
|  |  | 30 |
|  |  | 120 |

Which of the following is true about the flavoprotein complexes?  
a. they are all sites where protons are transferred across the inner mitochondrial membrane  
b. they all contain FMN  
c. they all contain FAD  
d. they all contain Fe-S centers  
e. they all transfer electrons to UQ

|  |  |  |
| --- | --- | --- |
|  |  | b, c, d, and e |
| http://owl.cengage.com/owlimages/check.GIF |  | d and e only |
|  |  | all but a |
|  |  | a, b, and c |
|  |  | All of the Above |