11.1: Exercises

Problems

1. How does ETC complexes transfer electrons?

2. Where does the NADH and [$FADH_2$] come from that drives ETC.

3.When the proton gradient is created because of the ETC where is the highest concentration of protons found?

4. What are the three electron carriers responsible for transporting protons?

5. Describe the purpose and name each electron carriers in the ETC

6. How many protons does it take to produce one ATP via oxidative phosphorolation?

7. Briefly describe the chemiosmotic theory of generation of ATP as a result of an electron transport chain.

8. Compare where the electron transport chain occurs in prokaryotic cells and in eukaryotic cells.

9. State the function of ATP synthases in chemiosmosis.

10. State the final electron acceptor and the end product formed at the end of aerobic respiration.

11. Fill in the blanks with appropriate choices from the given list.

____a protein that forms a channel to separate oxidative phosphorylation from ATP synthesis

____inhibitor of complex 1

____inhibitor of complex 3

____inhibitor of complex 4

____directly receiving electrons from quinone (reduced form)

____directly receiving electrons from complex 1

____rotational catalysis with inequivalent nucleotide binding sites

____scavenging radicals to counteract oxidative damage

A. DNP

B. succcinate dehydrogenase

C. UCP-1

D. rotenone

E. cytochrome c oxidase complex

F. ATP synthase

G. ubiquinone

H. superoxide dismutase

I. antimycin A

J. CN^-

K. NADH-Q reductase complex

L. cytochrome c reductase (oxidoreductase)

12. Which of the following is true regarding chemiosmosis?

A. The energy from a proton gradient is used to make ATP.

B. Chemiosmosis regenerates electron carriers like NADH AND $FADH_2$.

C. ATP synthesis creates a proton gradient that causes electron flow through an electron transport chain (ETC).

D. A temperature gradient drives ATP synthesis.
