**Lesson 6 – Electron transport chain**

**1. Structure of ETC**

What is electron transport chain?

What is the function of electron transport chain?

Where is the electron transport chain located?

Fill in the table

|  |  |  |  |
| --- | --- | --- | --- |
| Component of ETC | Name | Structure | Function |
| Complex I |  |  |  |
| Complex II |  |  |  |
| Coenzyme Q |  |  |  |
| Complex III |  |  |  |
| Complex IV |  |  |  |
| ATP synthase |  |  |  |

**2. Mechanism of electron transport chain**

How does electron transport chain work?

What is chemiosmosis?

How is the electrochemical gradient created in the mitochondrial membrane?

What processes are coupled with the electron transport chain?

Fill in the table

|  |  |  |
| --- | --- | --- |
|  | Substrate-level phosphorylation | Oxidative phosphorylation |
| Where is this process located? |  |  |
| What class of enzymes are used in reactions? |  |  |
| What is the energy source for ATP synthesis? |  |  |

**3. Regulation of ETC**

How do hormones regulate the electron transport chain?

Fill in the table

|  |  |  |
| --- | --- | --- |
|  | Uncoupling agents (Uncouplers) | Inhibitors |
| How do they work? |  |  |
| How do they affect the transfer of electrons along the chain? |  |  |
| How do they affect the formation of ATP in oxidative phosphorylation? |  |  |
| Examples |  |  |

**4. Situational tasks**

1. What would happen to the energy stored in the proton gradient if it weren't used to synthesize ATP or do other cellular work?

2. How do the roles of ubiquinone and cytochrome c differ from the roles of the other components of the electron transport chain?

3. Cyanide inhibits cytochrome c oxidase, a component of the electron transport chain. What effect would cyanide have on ATP synthesis?