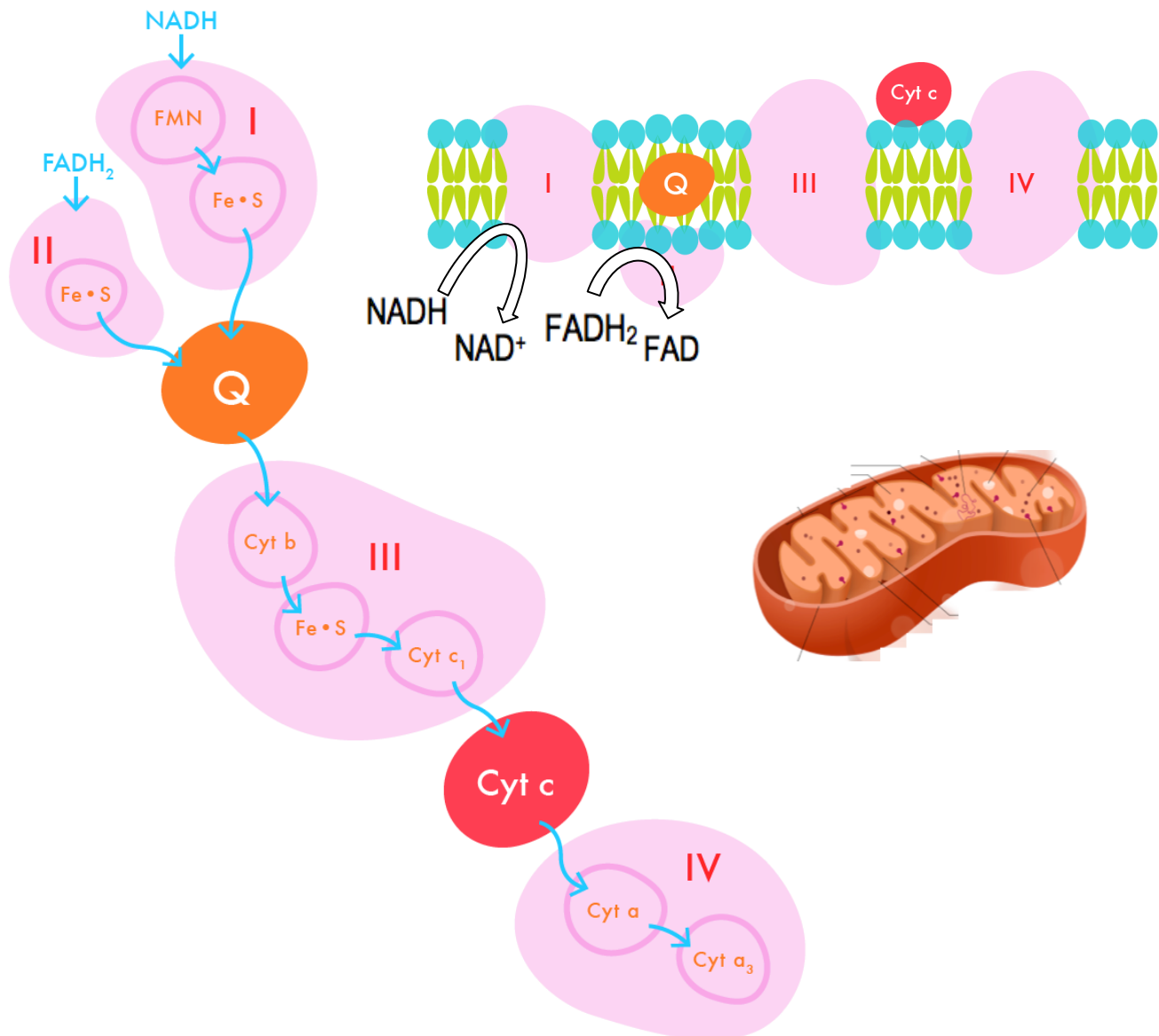


CONCEPT: OXIDATIVE PHOSPHORYLATION

- Quinones – lipid soluble molecules that contain an isoprene chain, and can carry 2 electrons
- Cytochromes – contain porphyrin ring with Fe, can carry 1 electron, CN and CO block electron flow at cyt a
- Iron sulfur proteins (Fe-S) – normally carry 1-2 electrons, some can carry 4, Fe complexed in by cys residues and S
- $\text{NADH} \rightarrow \text{Complex I} \rightarrow \text{Q} \rightarrow \text{Complex III (Cyt b} \rightarrow \text{Cyt } c_1) \rightarrow \text{Cyt c} \rightarrow \text{Complex IV (cyt (a+a}_3) \rightarrow \text{O}_2$
- $\text{FADH}_2 \rightarrow \text{Complex II} \rightarrow \text{Q} \rightarrow \text{Complex III (Cyt b} \rightarrow \text{Cyt } c_1) \rightarrow \text{Cyt c} \rightarrow \text{Complex IV (cyt (a+a}_3) \rightarrow \text{O}_2$



- Complex I to complex IV – $\text{NADH} + 11\text{H}^+ + \frac{1}{2}\text{O}_2 \rightarrow \text{NAD}^+ + 10\text{H}^+(\text{pumped}) + \text{H}_2\text{O}$
- Complex II to complex IV – $\text{FADH}_2 + 6\text{H}^+ + \frac{1}{2}\text{O}_2 \rightarrow \text{FAD} + 6\text{H}^+(\text{pumped}) + \text{H}_2\text{O}$