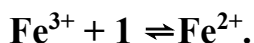
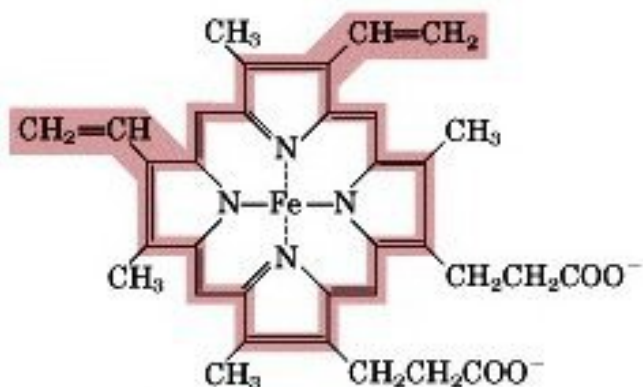


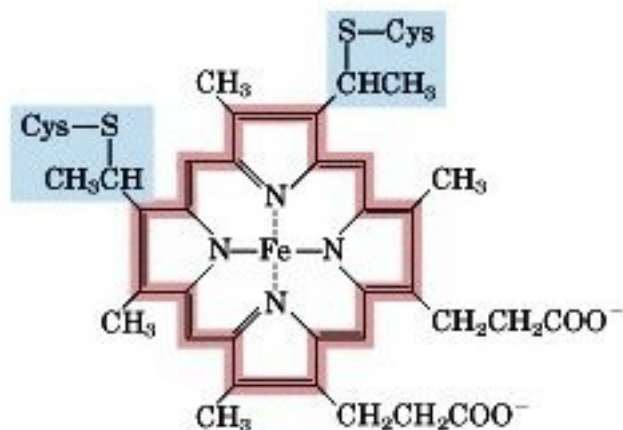
Electron Transport Chain Electron Carriers

- 1. FMN (Flavin mononucleotide) is a coenzyme derived from riboflavin (vitamin B₂). FMN contains a flavin ring system that is also found in FAD. In riboflavin, the ring system is attached to ribitol, the sugar alcohol of ribose. The reduced product is FMNH₂.**
- 2. Fe-S clusters is the name given to a group of iron-sulfur proteins that contain iron-sulfur clusters embedded in the proteins of the electron transport chain. The clusters contain iron ions, inorganic sulfides, and several cysteine groups. The iron in the clusters is reduced to Fe²⁺ and oxidized to Fe³⁺ as electrons accepted and lost.**
- 3. Coenzyme Q (Q, CoQ, Ubiquinone) is derived from quinone, which is a six-carbon cyclic compound with two double bonds and two keto groups attached to a long carbon chain. Coenzyme Q is reduced when the keto groups of quinone accept hydrogen ions and electrons.**
- 4. Cytochromes (cyt) are proteins that contain an iron ion in a heme group. The different cytochromes are indicated by the letters following the abbreviation of the cytochrome (cyt): cyt b, cyt c, etc. In each cytochrome, the Fe³⁺ accepts a single electron to form Fe²⁺, which is oxidized back to Fe³⁺ when the electron is passed to the next cytochrome.**

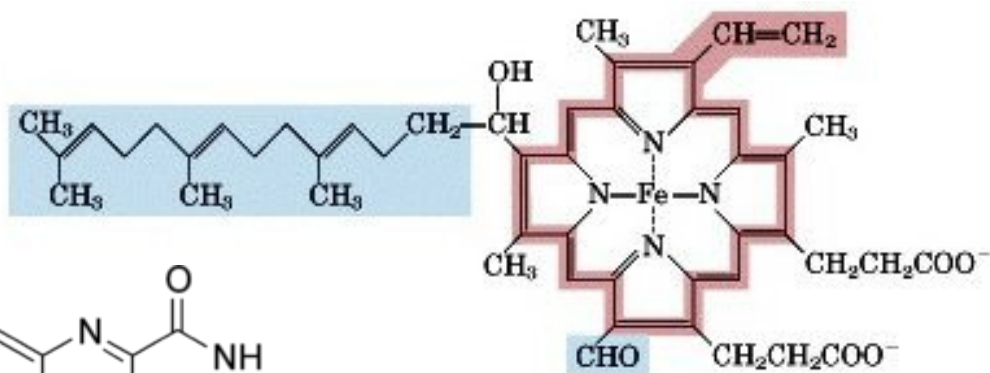




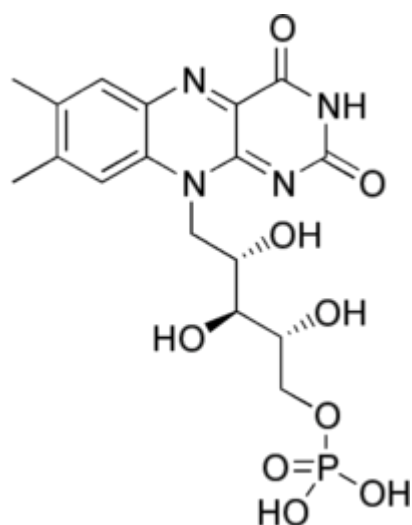
Iron protoporphyrin IX
(in *b*-type cytochromes)



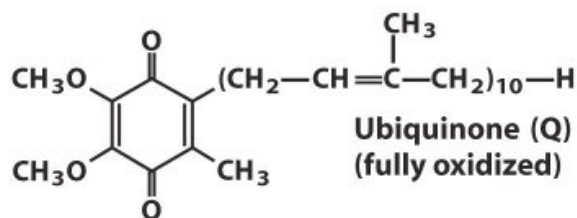
Heme C
(in *c*-type cytochromes)



Heme A
(in *a*-type cytochromes)



FMN (Flavin
mononucleotide)



Ubiquinone (Q)
(fully oxidized)

Fe-S Clusters

