

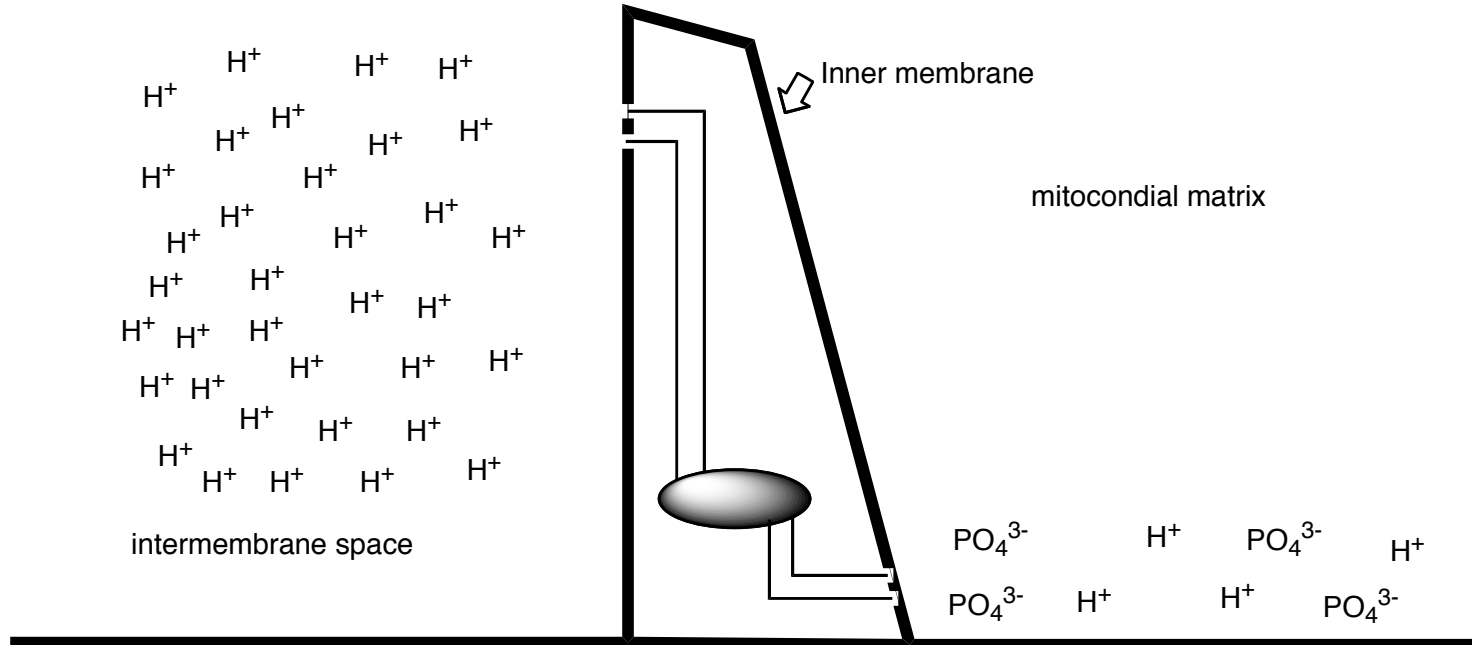
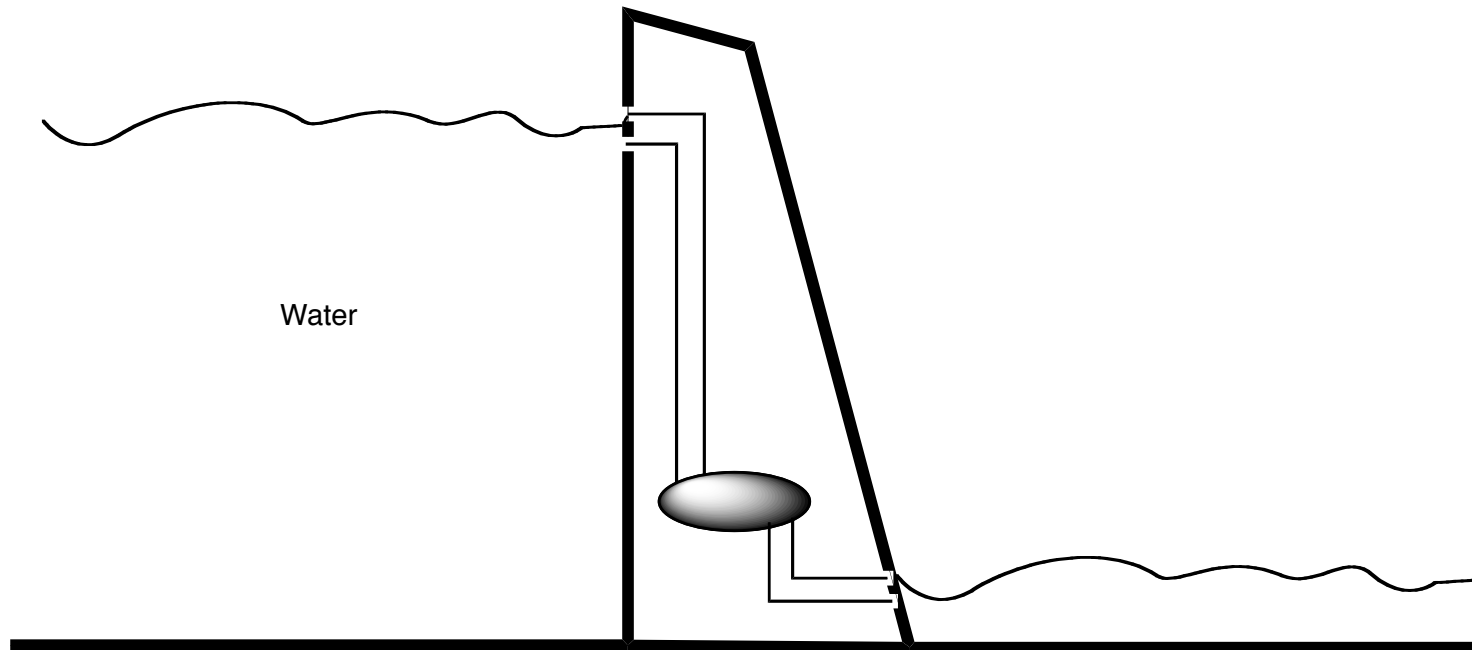
(33) **Today**

Chap 19.2: ATP Synthase and ROSs

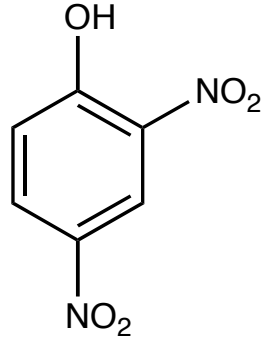
Next Class (34)

In-class review period

Rework Test 3 and hand in on Monday, May 5.

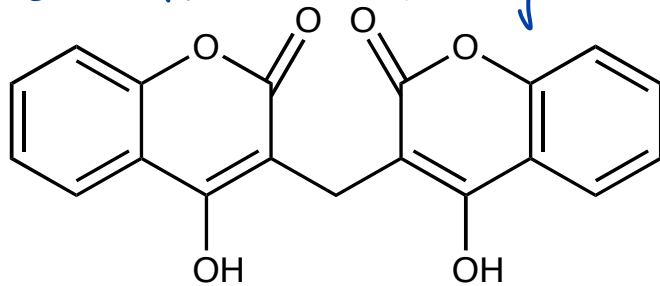


Uncoupling agents



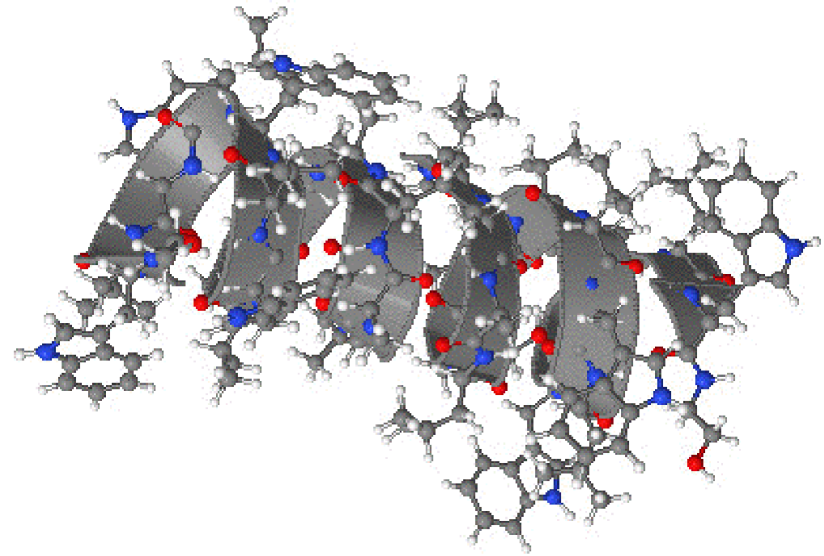
dinitrophenol

evidence that the H^+ gradient drive ATP synthesis.

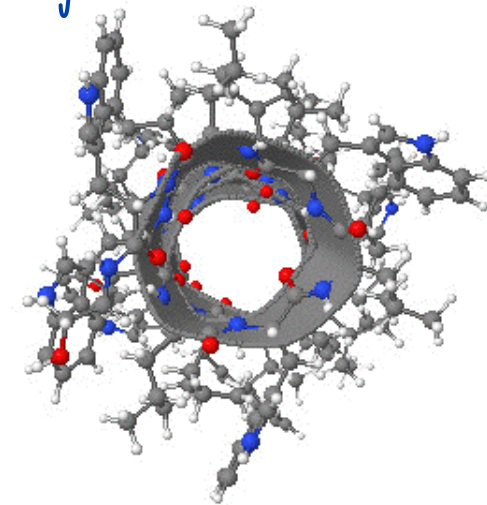


dicumarol

Ionophores

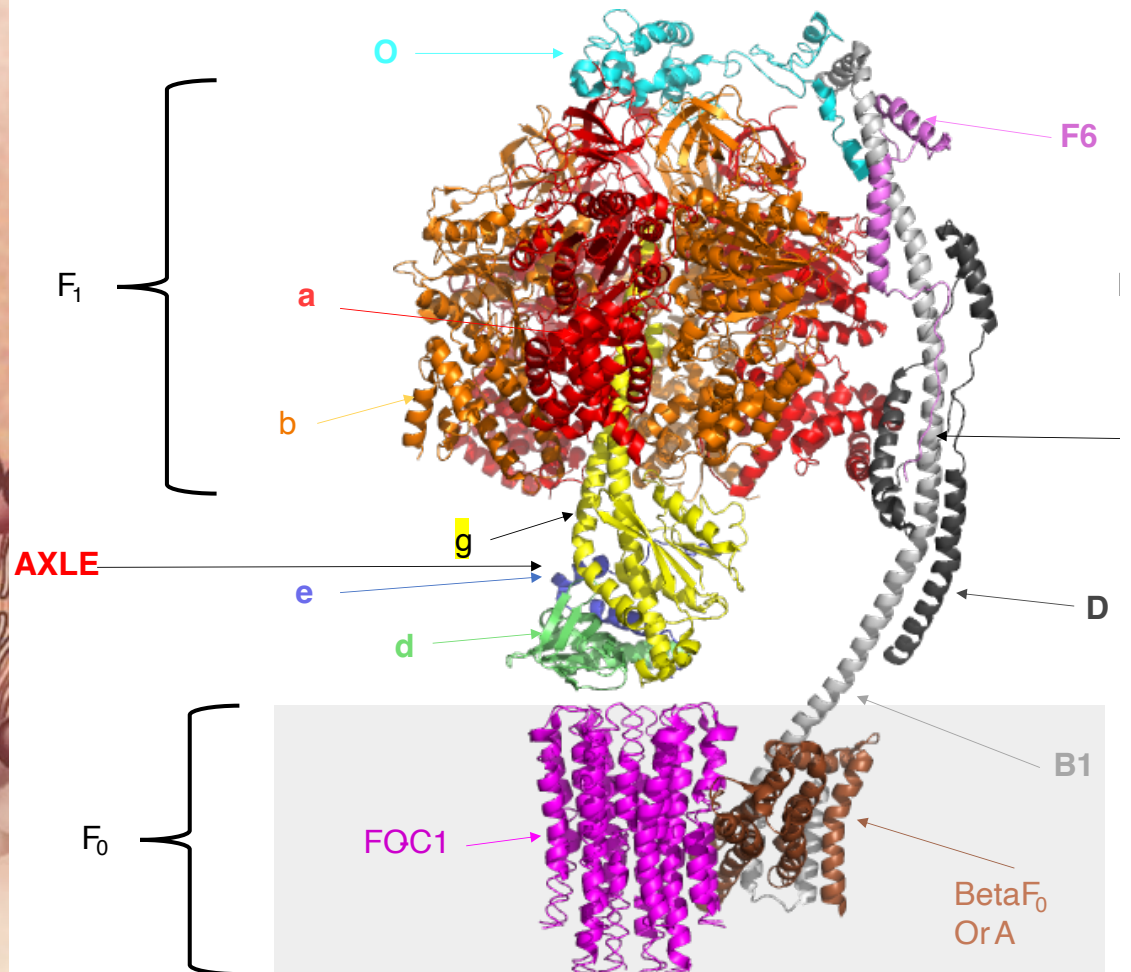
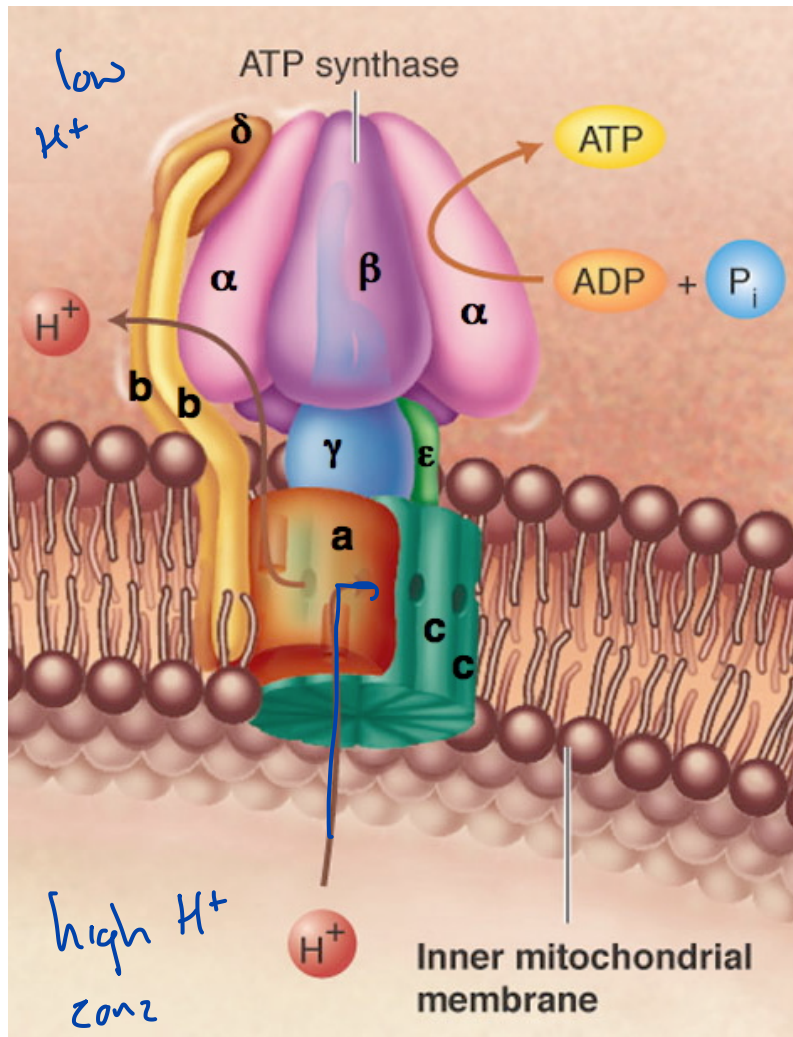


gramicidin A



These molecules disrupt the gradient (bring H^+ into the matrix)
ATP production ceases

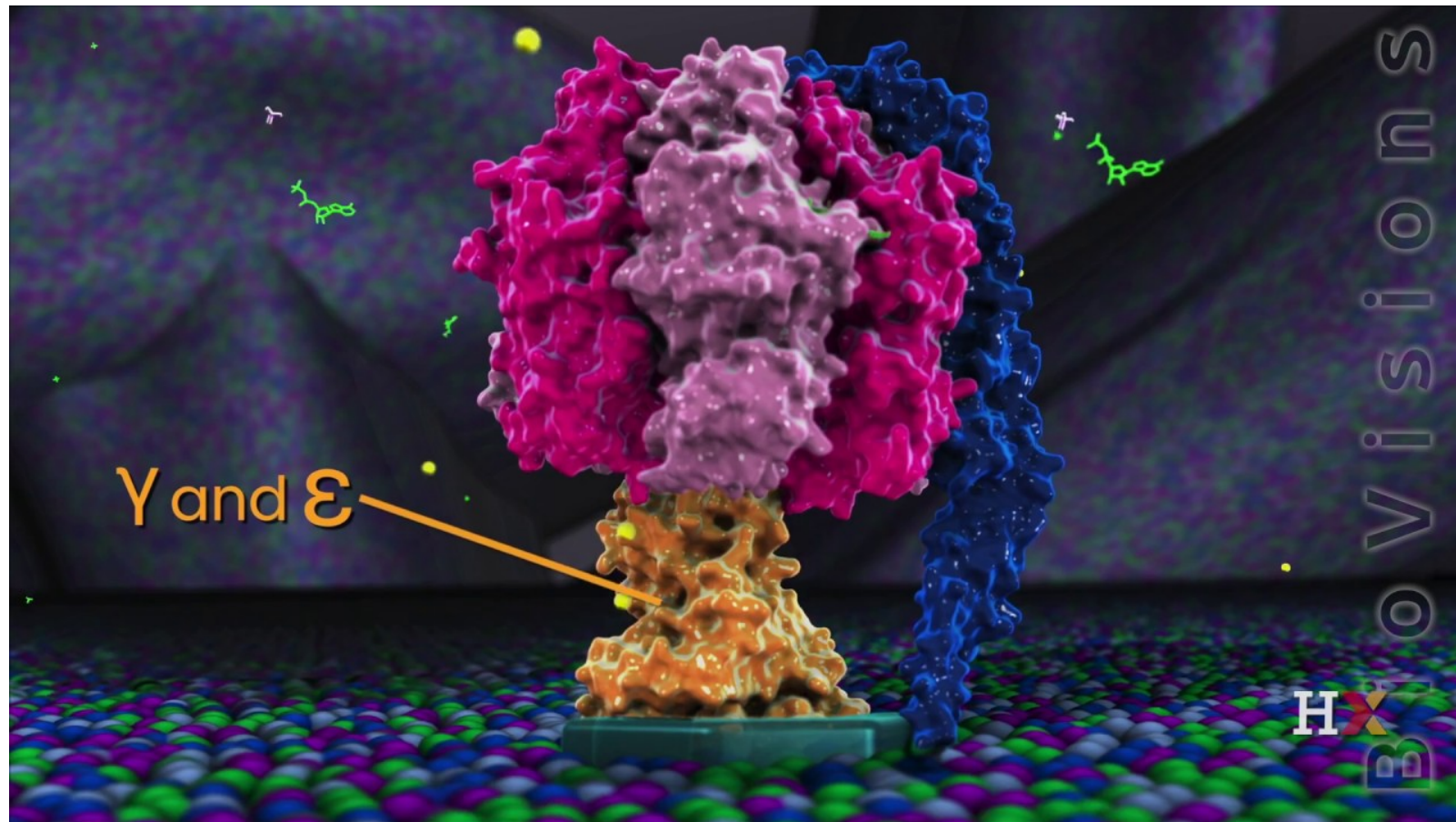
ATP Synthase



ATP Synthase from *Biochemistry* by McKee and McKee

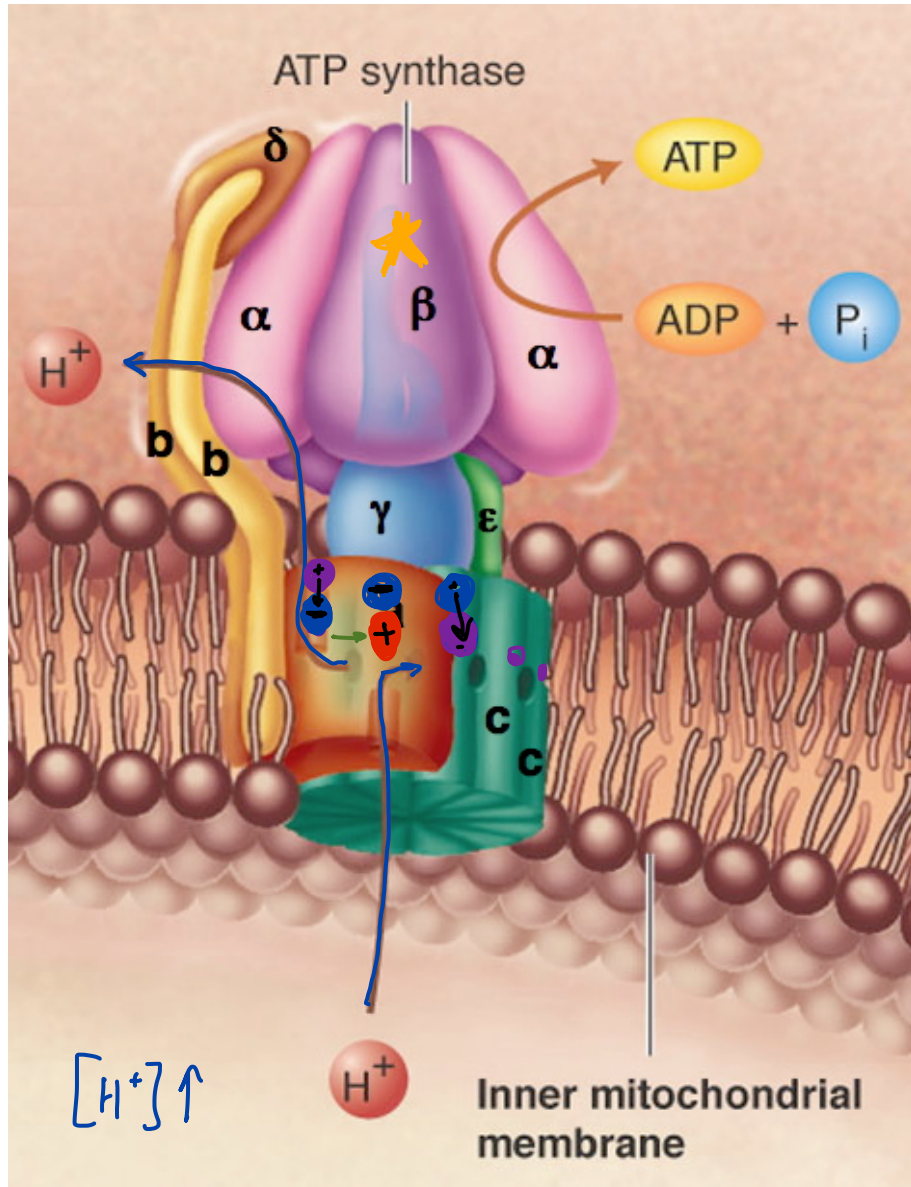
Fig. 19.2.1 [https://bio.libretexts.org/Bookshelves/Biochemistry/Fundamentals_of_Biochemistry_\(Jakubowski_and_Flatt\)/02:_Unit_II-_Bioenergetics_and_Metabolism/19:_Oxidative_Phosphorylation/19.02:_ATP_Synthesis](https://bio.libretexts.org/Bookshelves/Biochemistry/Fundamentals_of_Biochemistry_(Jakubowski_and_Flatt)/02:_Unit_II-_Bioenergetics_and_Metabolism/19:_Oxidative_Phosphorylation/19.02:_ATP_Synthesis)

ATP Synthase

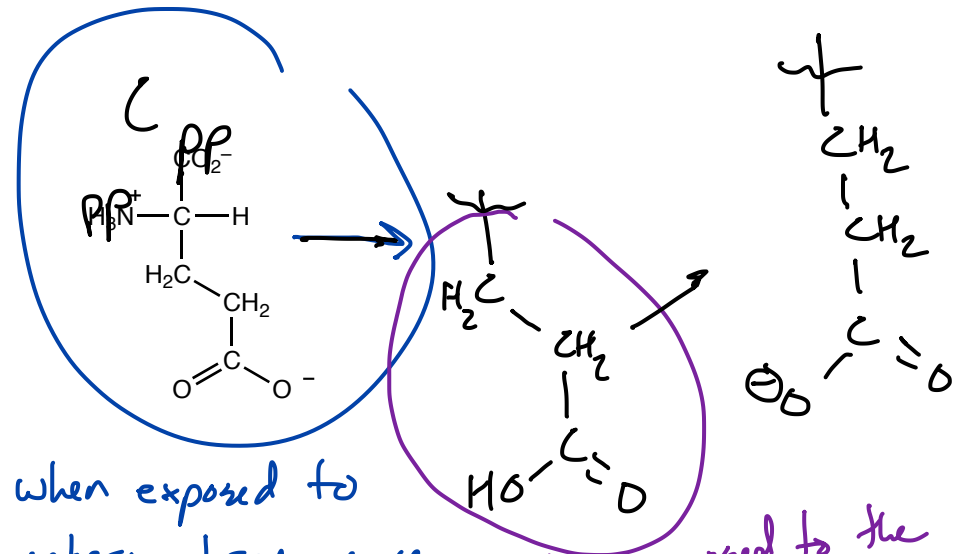


ATP synthase in action. Muzzey and Lue, HHMI Institute. For educational and non-commercial use only.

ATP Synthase

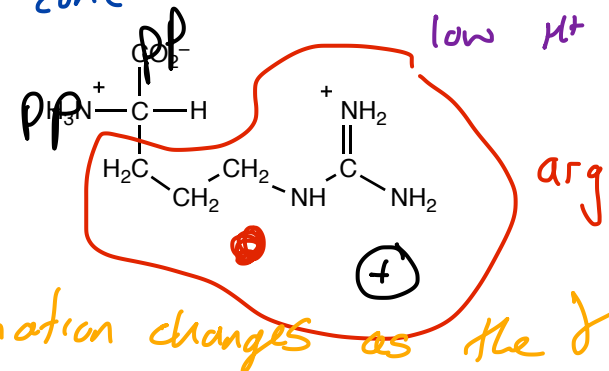


intermembrane space



when exposed to intermembrane space the weak base picks up an H^+ due to high H^+ conc

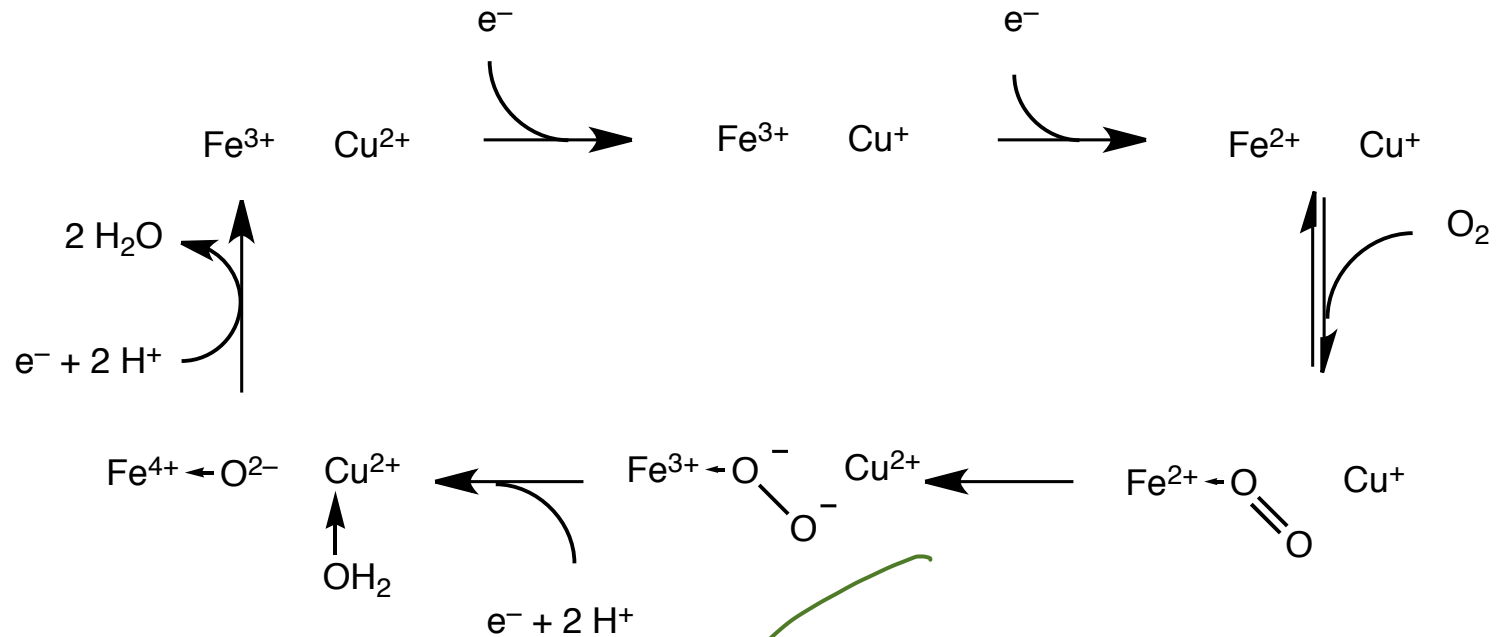
when exposed to the matrix, the H^+ is released from the weak acid due to low H^+ conc



* conformation changes as the δ

finger rotates ① allows ADP and P_i to bind to the active site ② pushes them together activating bond formation ③ expells ATP into the matrix

Electrons, Oxygen, and the Damage that Radicals Can Do...



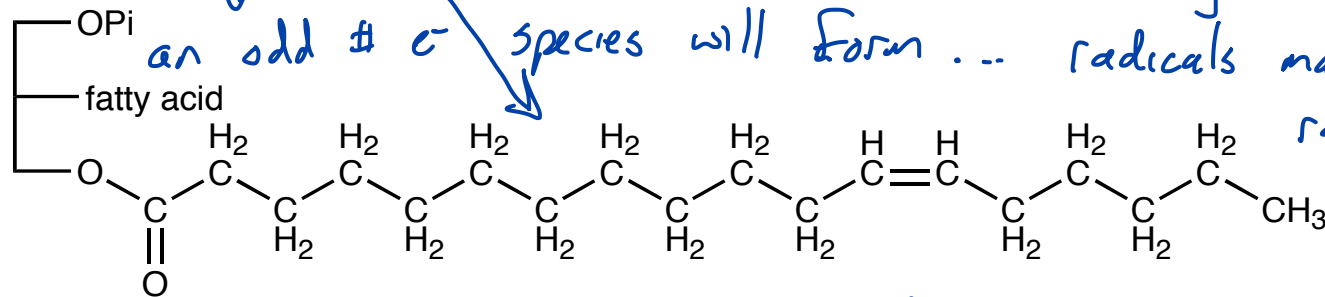
odd # of e^- 's
reacts with
even # of e^- 's

things go sideways

Reactive oxygen species

$\bullet\text{OH}$ hydroxyl radical

these ROS are forming in the mitochondrial membrane



a membrane lipid

radicals make more radicals...
chain rxn

