

1. Some bacteria “eat” H_2 gas. They oxidize H_2 ($\varepsilon^{\circ'} = 0\text{ V}$) with $S + 2H \rightarrow H_2S$ ($\varepsilon^{\circ'} = -0.2\text{ V}$) as their terminal electron acceptor. All else being equal, would these bacteria grow slower or faster than bacteria oxidizing pyruvate ($\varepsilon^{\circ'} = -0.2\text{ V}$) and using O_2 ($\varepsilon^{\circ'} = -0.8\text{ V}$) as their terminal electron acceptor? Why?
2. You find a drug that covalently modifies $P700$ so it can no longer absorb a photon. Where do e^- accumulate in the photosynthesis electron transport chain? What molecule(s) will the plant run out of? Before the plant runs out of reactants, will the drug-treated plants generate ATP?
3. How do plants use exciton coupling in photosynthesis?