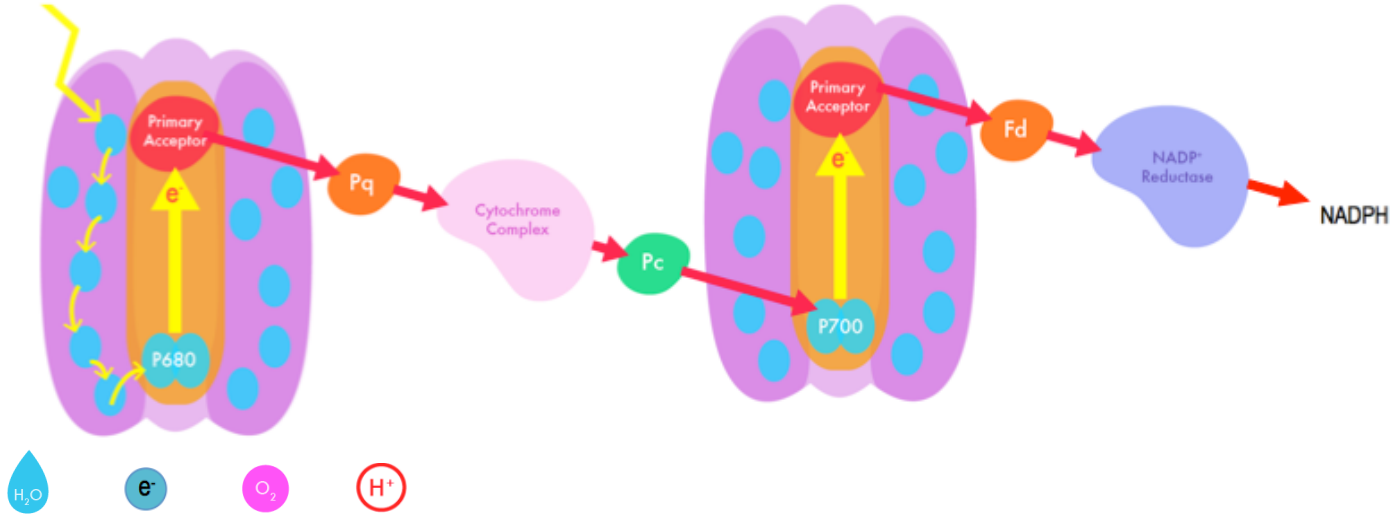
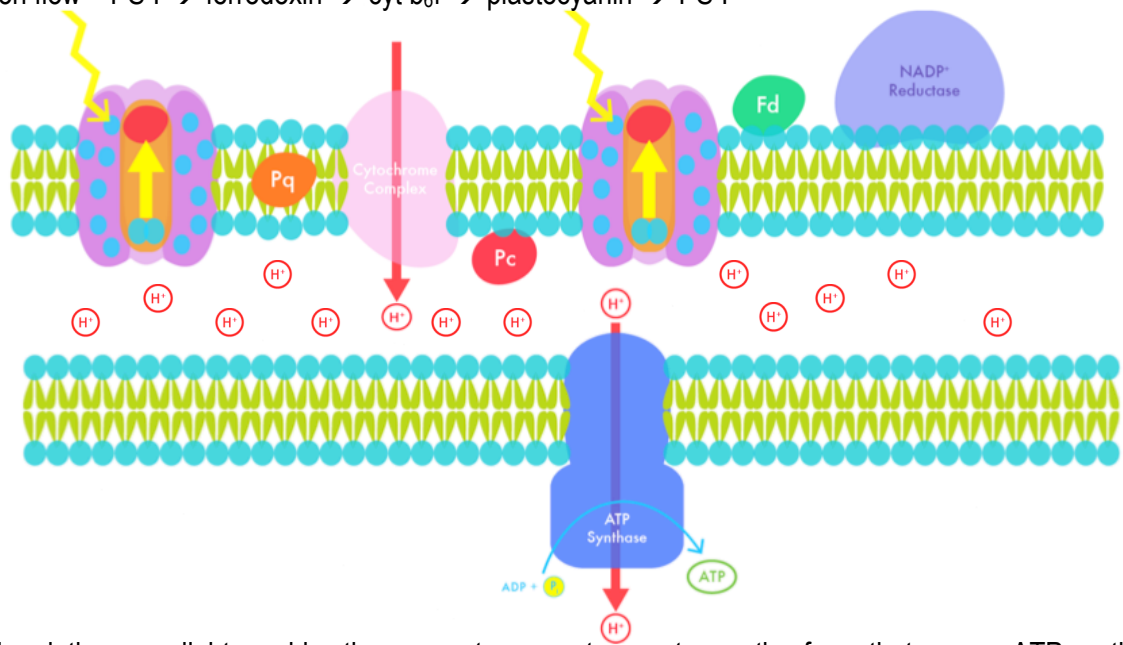
CONCEPT: PHOTOPHOSPHORYLATION

- Photosystem II – reaction center contains chlorophyll P680, provides electrons for noncyclic electron flow
    - □ Splits water to replace lost electrons, water splitting uses 5 redox states of Mn
- Cyt-b_6f – contains heme, Fe-S, and ß-carotene, proton pump that receives electrons from plastoquinone
    - □ Plastoquinone pulls H^+ out of stroma to pump into the lumen
    - □ Cyt-b_6f electron flow: plastoquinone → cyt b_6 → cyt f → plastocyanin (Cu)
- Photosystem I – reaction center contains chlorophyll P700, provides electrons for noncyclic and cyclic electron flow
    - □ Electrons ejected from reaction center are picked up by ferrodoxin, and can go to cyt-b_6f or to $NADP^+$ reductase



- Noncyclic electron flow – PS II → plastoquinone → cyt b_6f → plastocyanin → PS I → ferrodoxin → $NADP^+$ reductase
- Cyclic electron flow – PS I → ferrodoxin → cyt b_6f → plastocyanin → PS I



- Photophosphorylation – sunlight provides the energy to generate a proton motive force that powers ATP synthase