CATABOLISM

as it relates to PHOTOTROPHIC organisms

(Diagram clarified Oct. 27, 2010.)

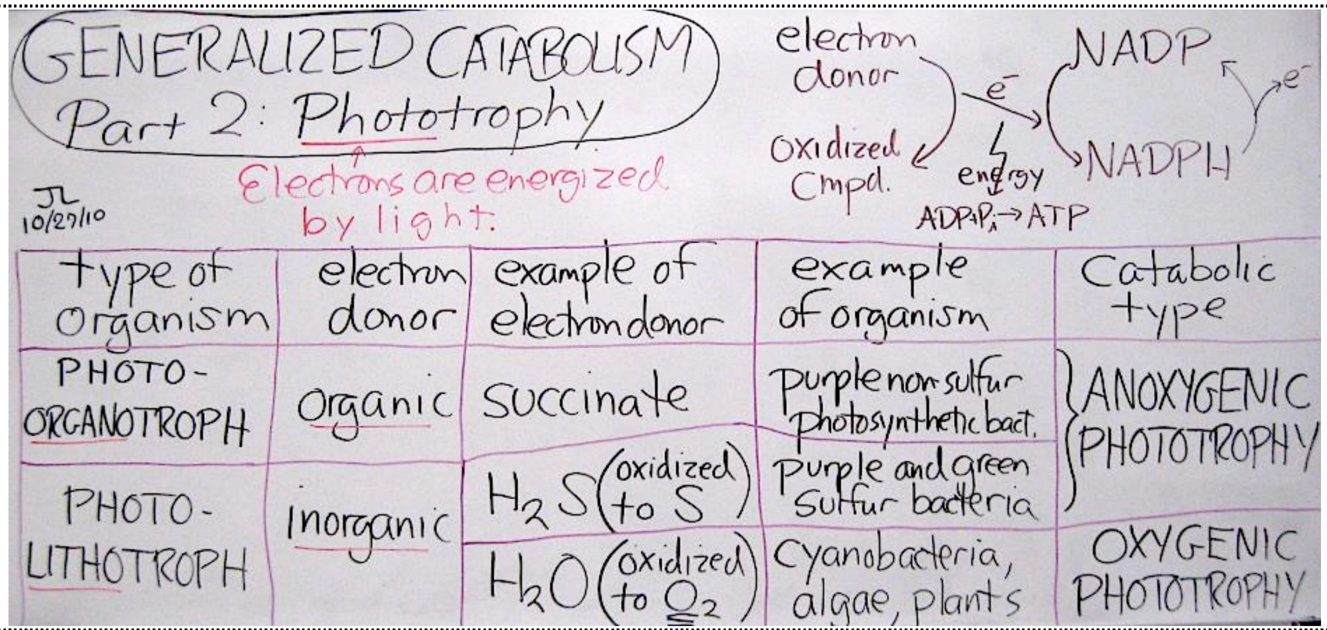
For any given phototrophic organism, this is accomplished by <u>either</u> of the following processes:

- **OXYGENIC PHOTOTROPHY**
- **ANOXYGENIC PHOTOTROPHY**

We consider organisms other than chemotrophs when we get into the enrichment/isolation experiments – particularly Experiment 11B on the **purple non-sulfur photosynthetic bacteria** which are an example of **<u>anoxygenic phototrophs</u>**. They are "phototrophs" in that electrons are energized by light, and they are "anoxygenic" in not being able to produce oxygen.

For an **<u>oxygenic phototroph</u>**, the electron donor would be water (H_2O) which – with the release of electrons – is oxidized to O_2. ("Oxygenic" means oxygen-generating.)

As in our discussion of catabolism as it relates to chemotrophic organisms, the diagram helps to differentiate the terms **<u>organotroph</u>** and **<u>lithotroph</u>**, and thus we are now considering "photoorganotrophs" and "photolithotrophs." The point should be made that there are photolithotrophs that are not oxygenic; some can utilize inorganic compounds as electron donors such as hydrogen sulfide (H_2S) and hydrogen gas (H_2).



Note: NADP should be designated $NADP^+$.

Phototrophy is considered on our ultra-generalized catabolism page at <u>http://www.jlindquist.net/generalmicro/102catabolism.html</u>, and one can expect more detail in specific pathways found in textbooks and lecture material.

Our web page which highlights the purple non-sulfur photosynthetic bacteria is on our old Bacteriology 102 website here: h<u>ttp://www.splammo.net/bact102/102pnsb.html</u>.

(updated 4/11/11)