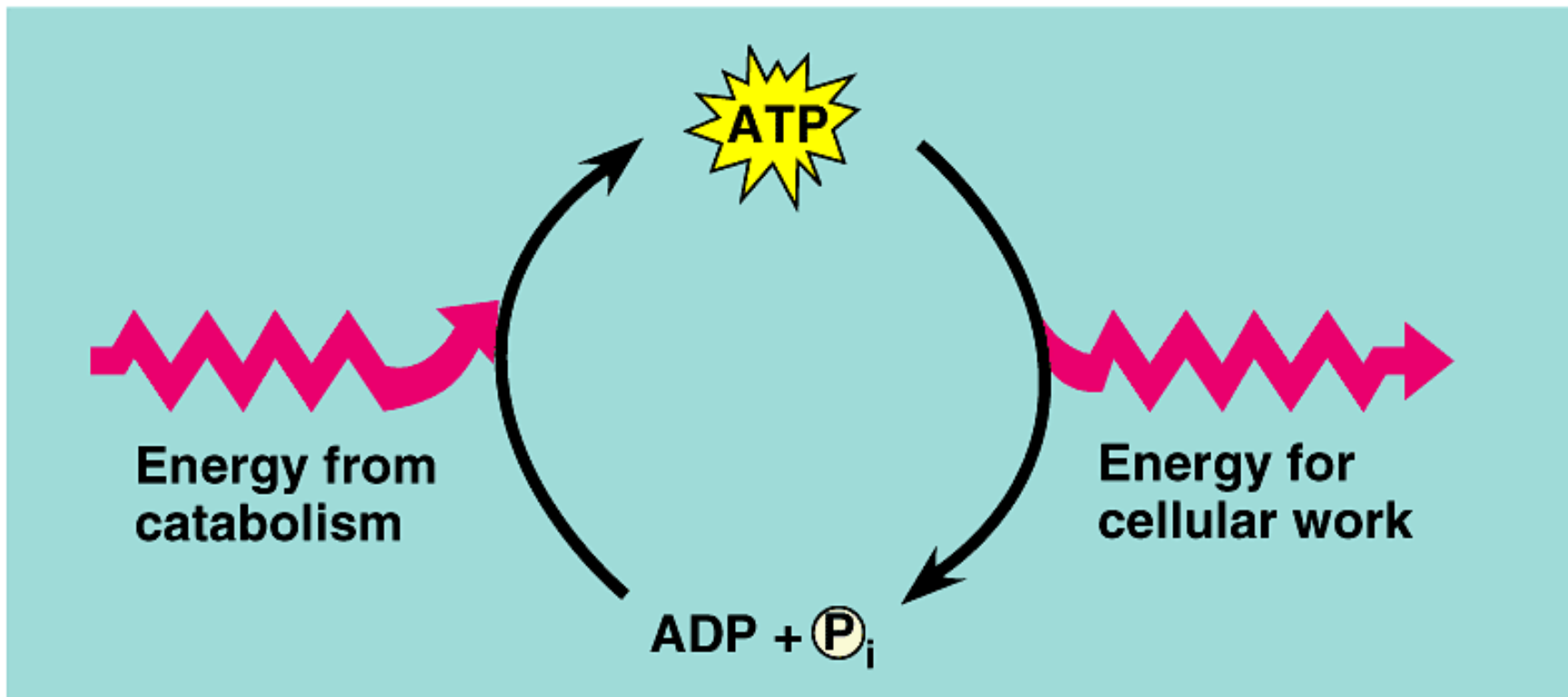


Pre AP Biology

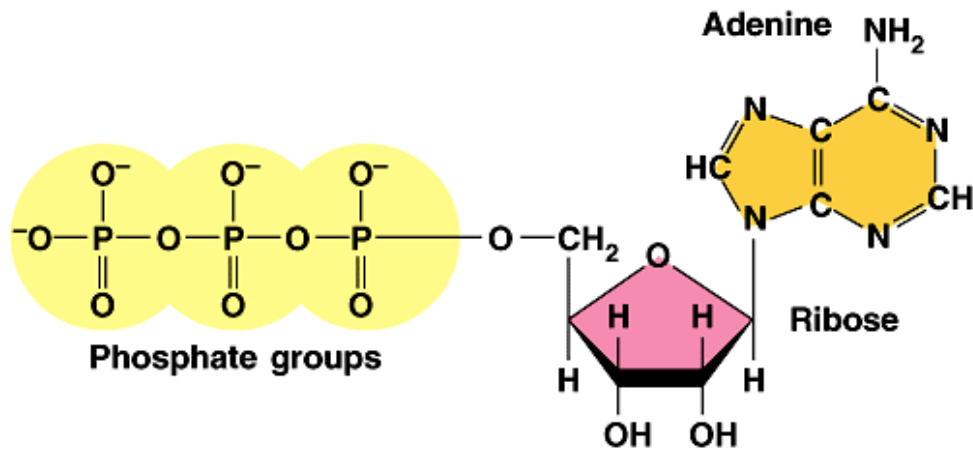
Cellular Respiration 3.2

Part 1

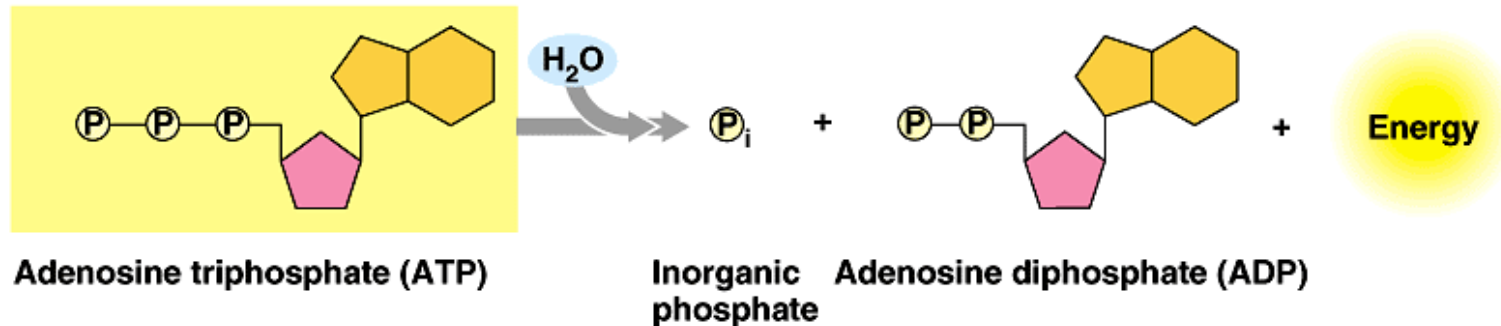
Cellular Energy



ATP Structure



(a) Structure of adenosine triphosphate **ATP**



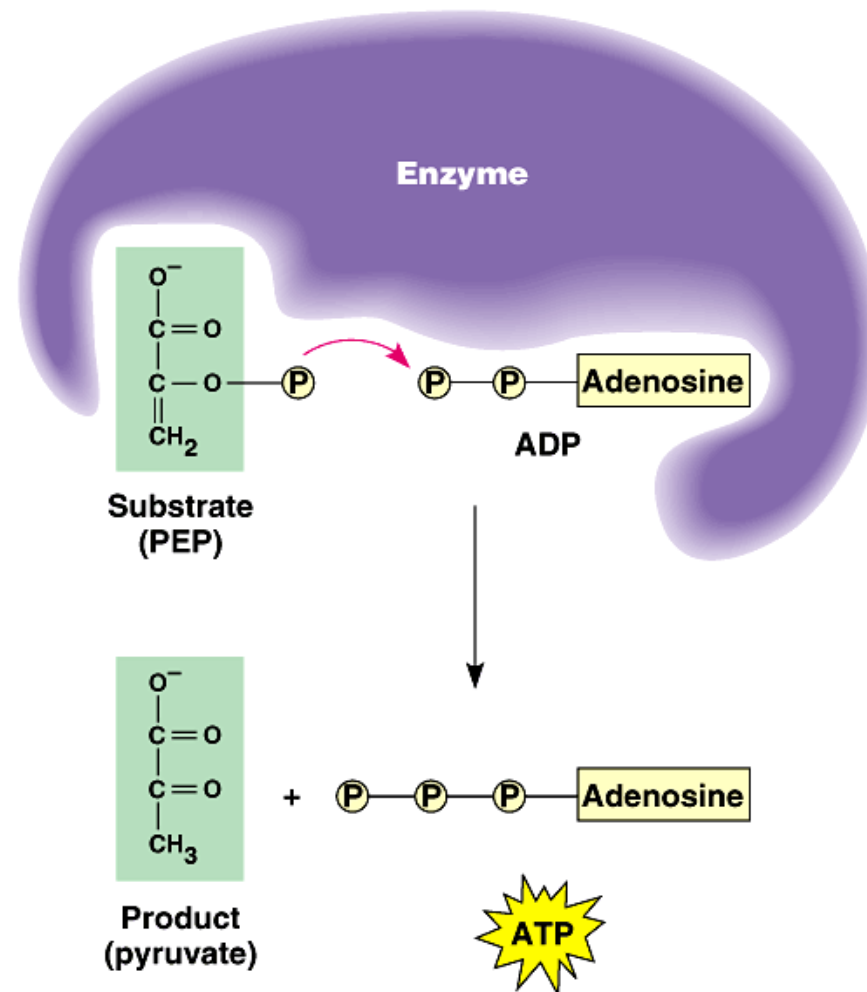
Adenosine triphosphate (ATP)

Inorganic phosphate

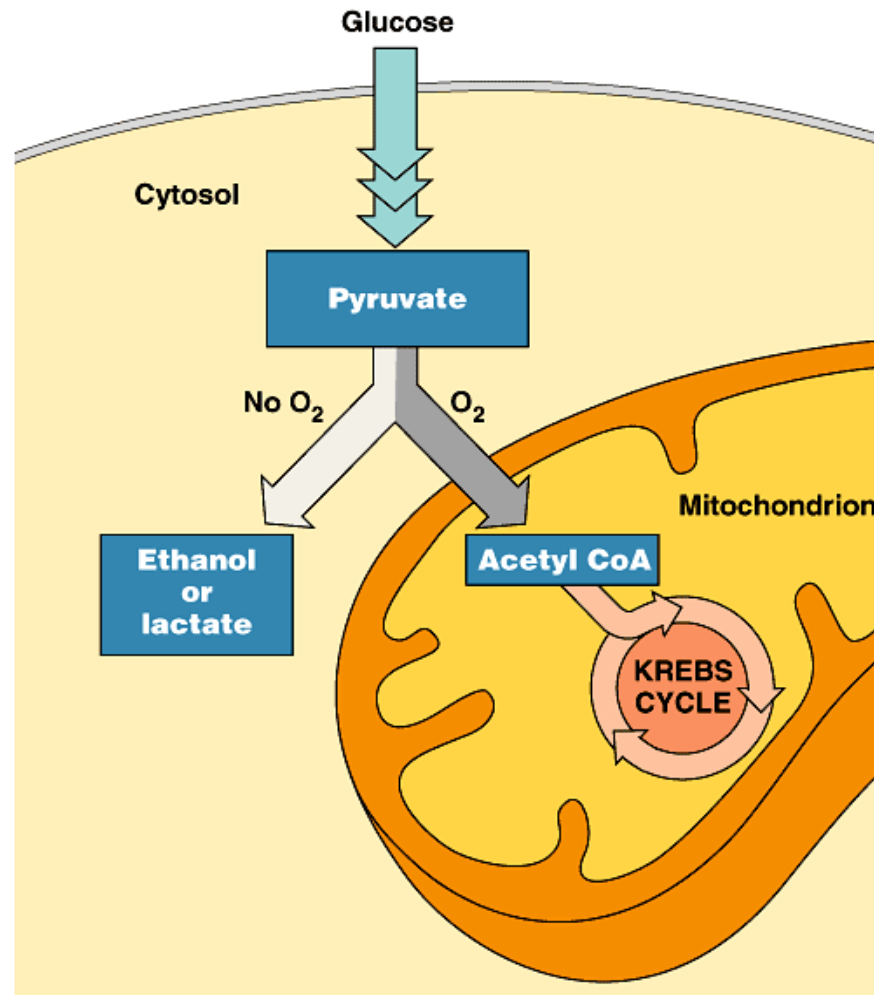
Adenosine diphosphate (ADP)

(b) Hydrolysis of ATP

Phosphorylation using Free energy to make ATP



Is Oxygen present?



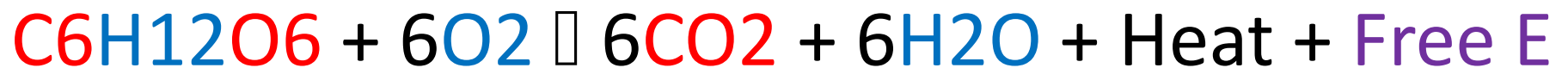
Photosynthesis and Cellular Respiration

chemical reactions

(Remember... conservation of matter.)

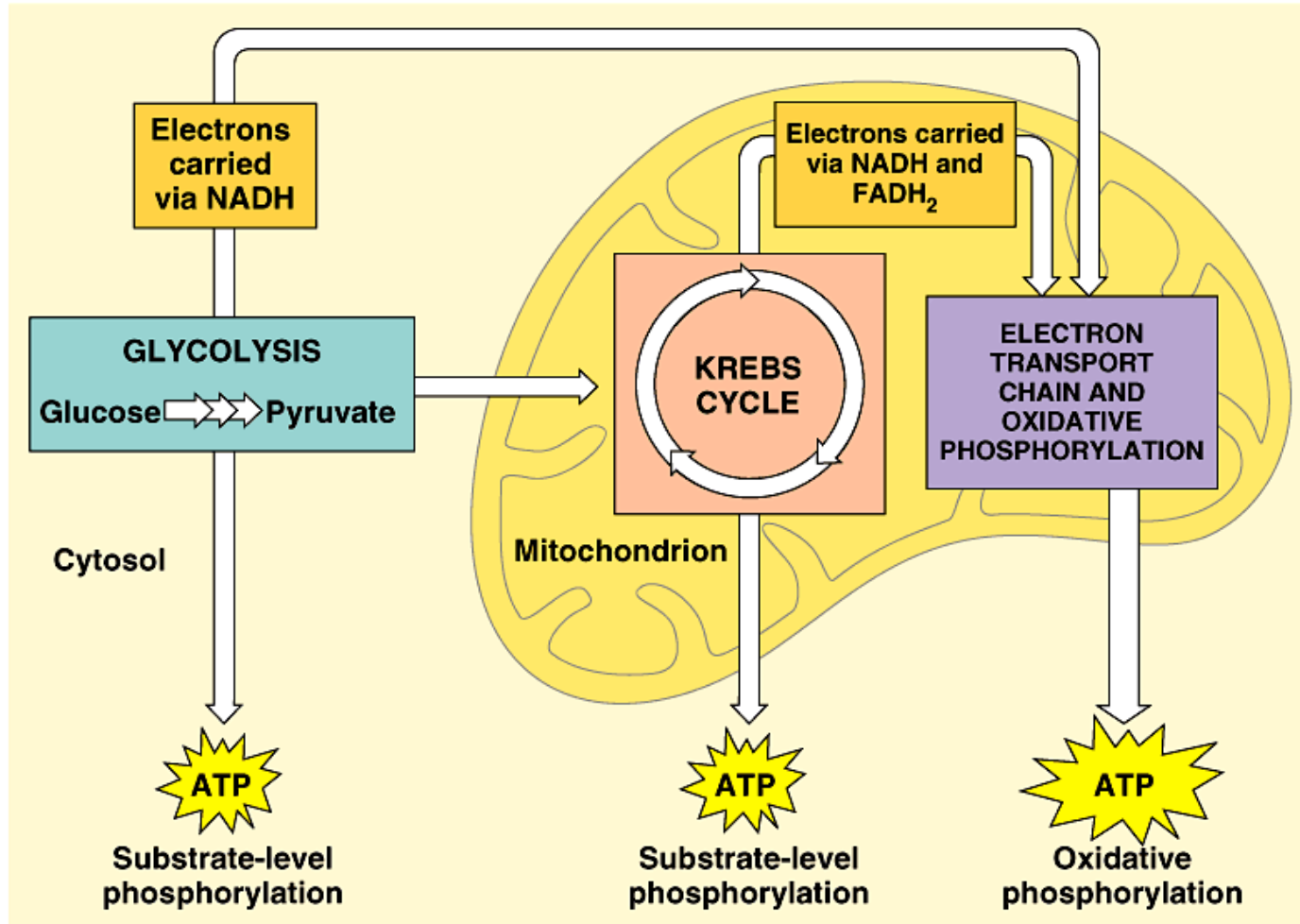


Photosynthesis



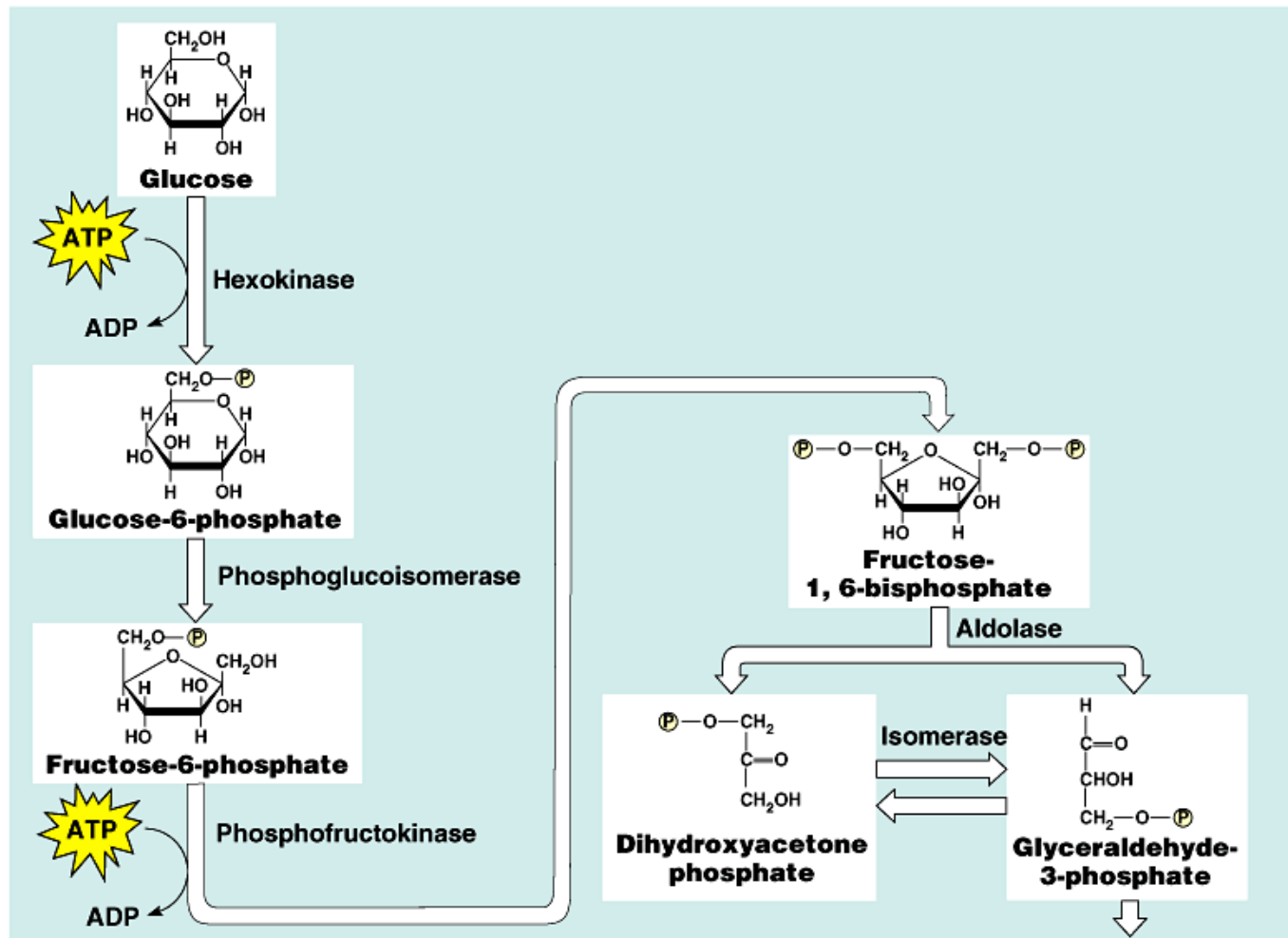
Cellular Respiration

Process of Cellular Respiration



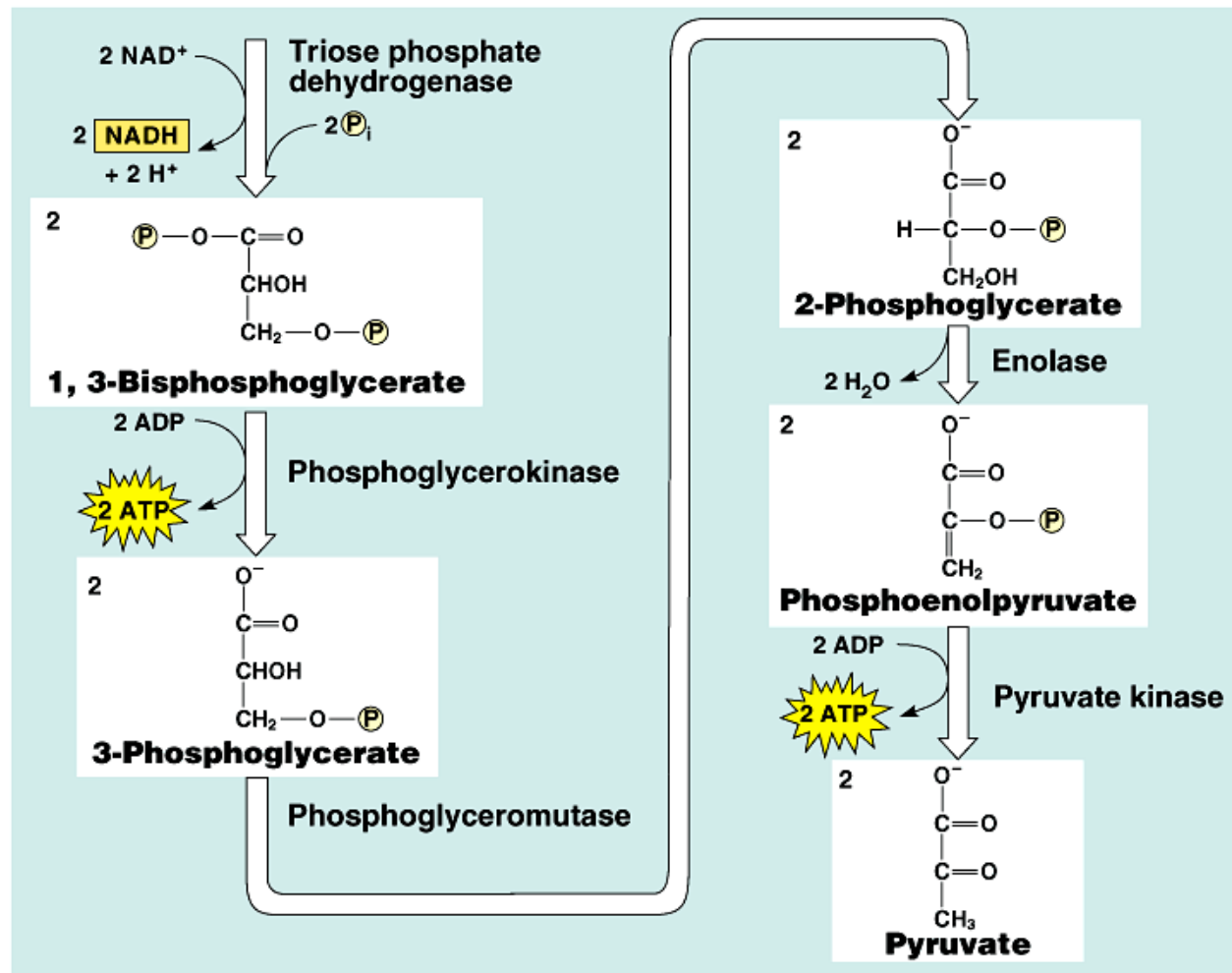
Energy Investment Phase

(See a phosphate being attached on each side of the glucose?)



Energy Payoff Phase

Convert your 2 G3Ps → 2 Pyruvates



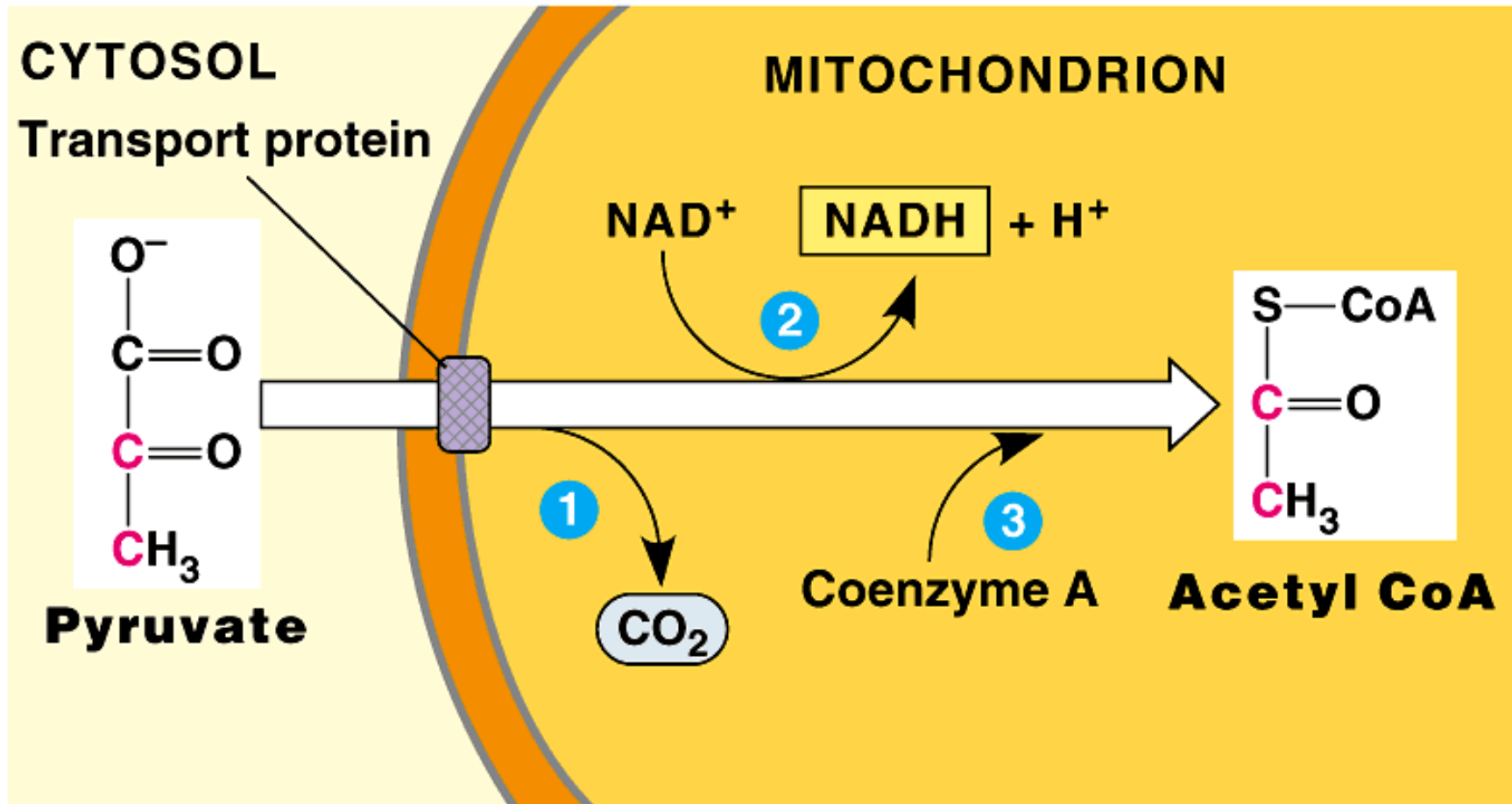
Pre AP Biology

Cellular Respiration 3.2

Part 2

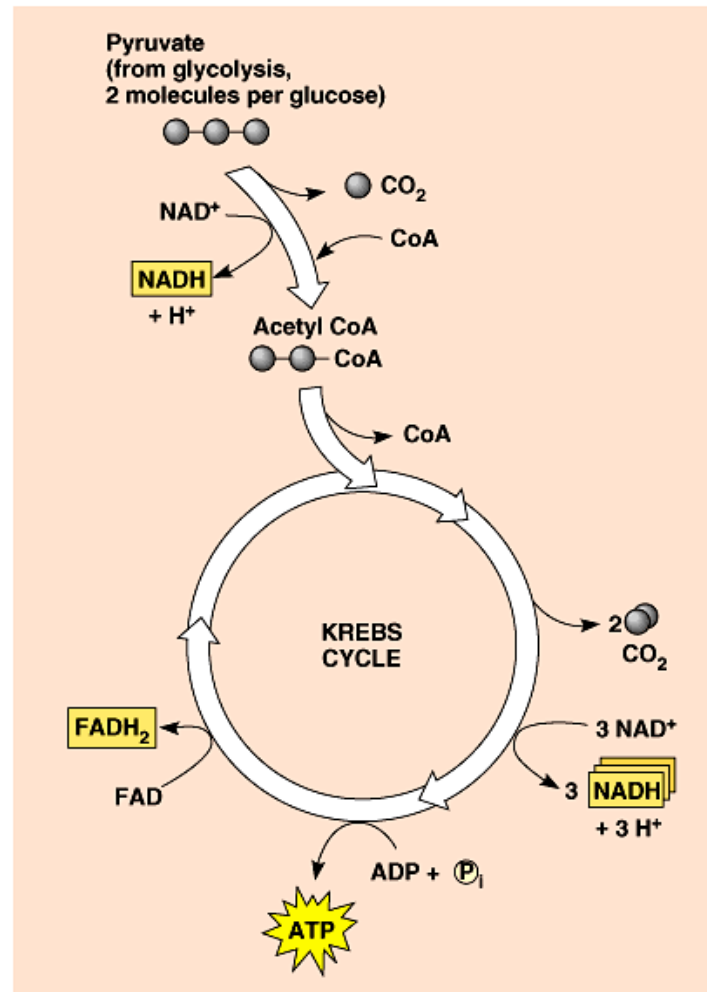
Pyruvate Conversion

Remember, this happens for *each* Pyruvate (There are 2)



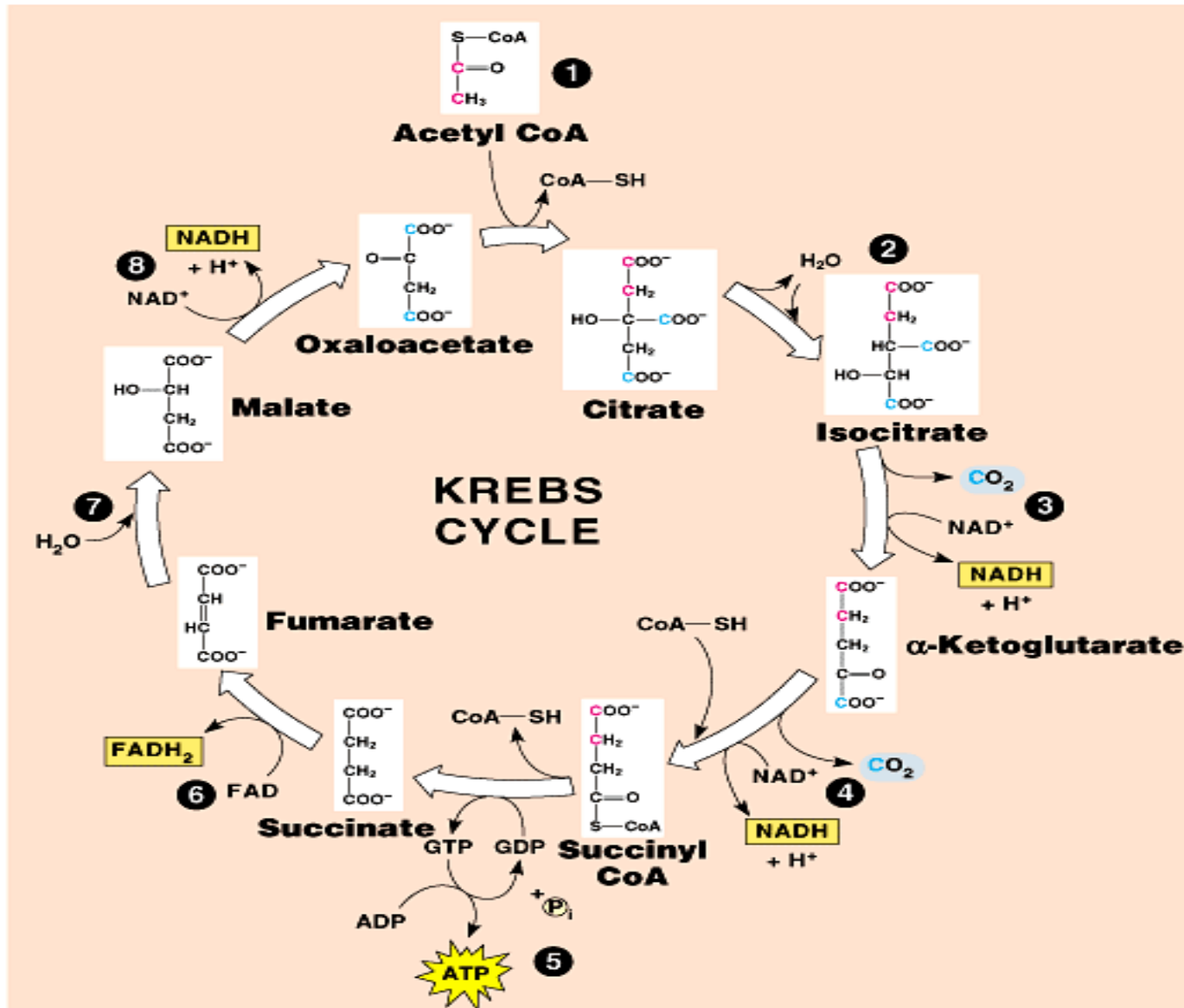
Kreb's Cycle Simplified

All about making electron carriers

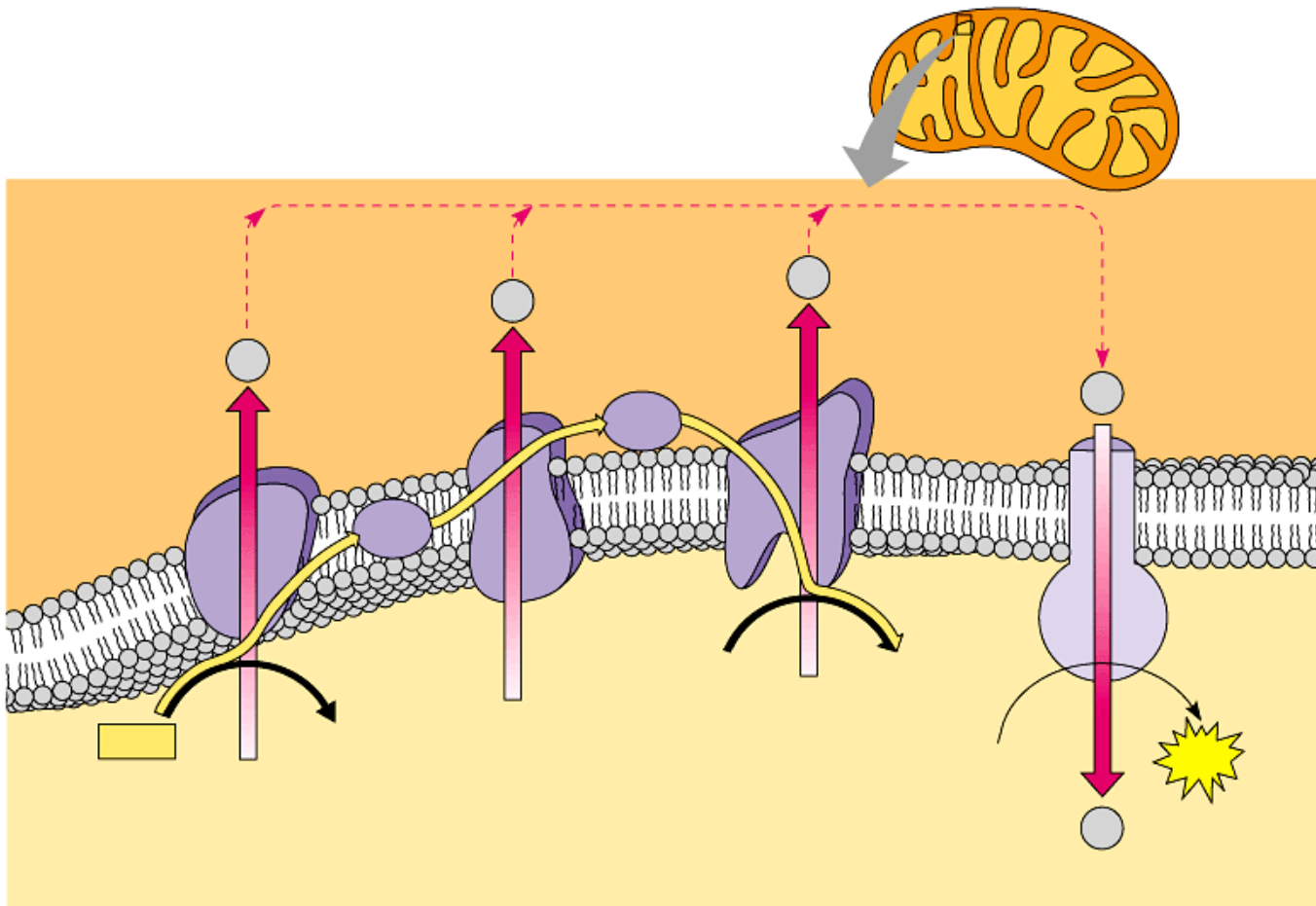


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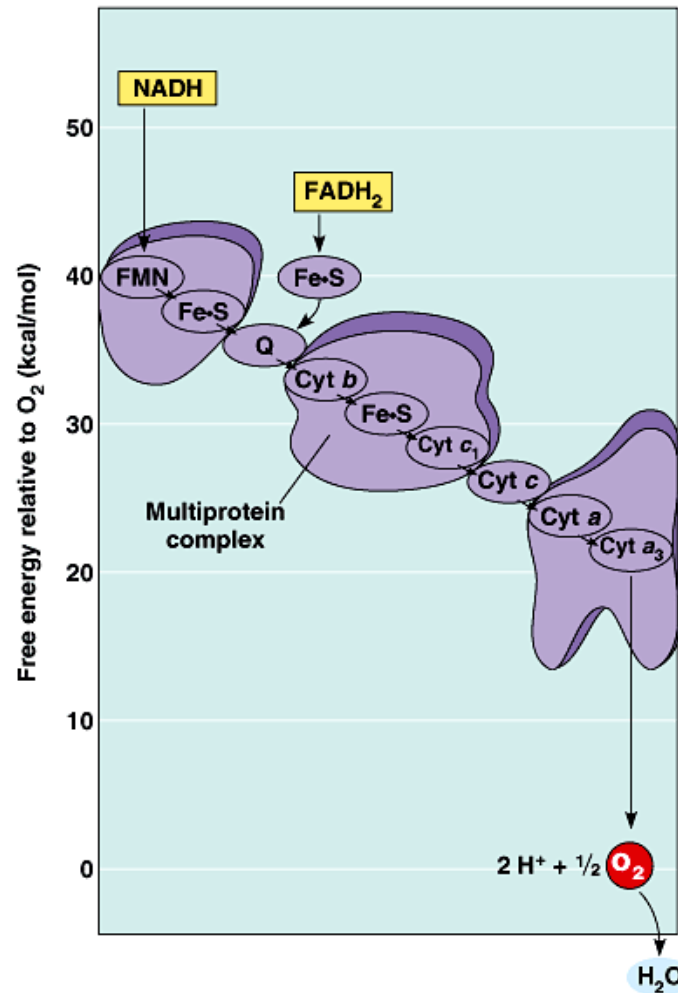
Actual Kreb's Cycle



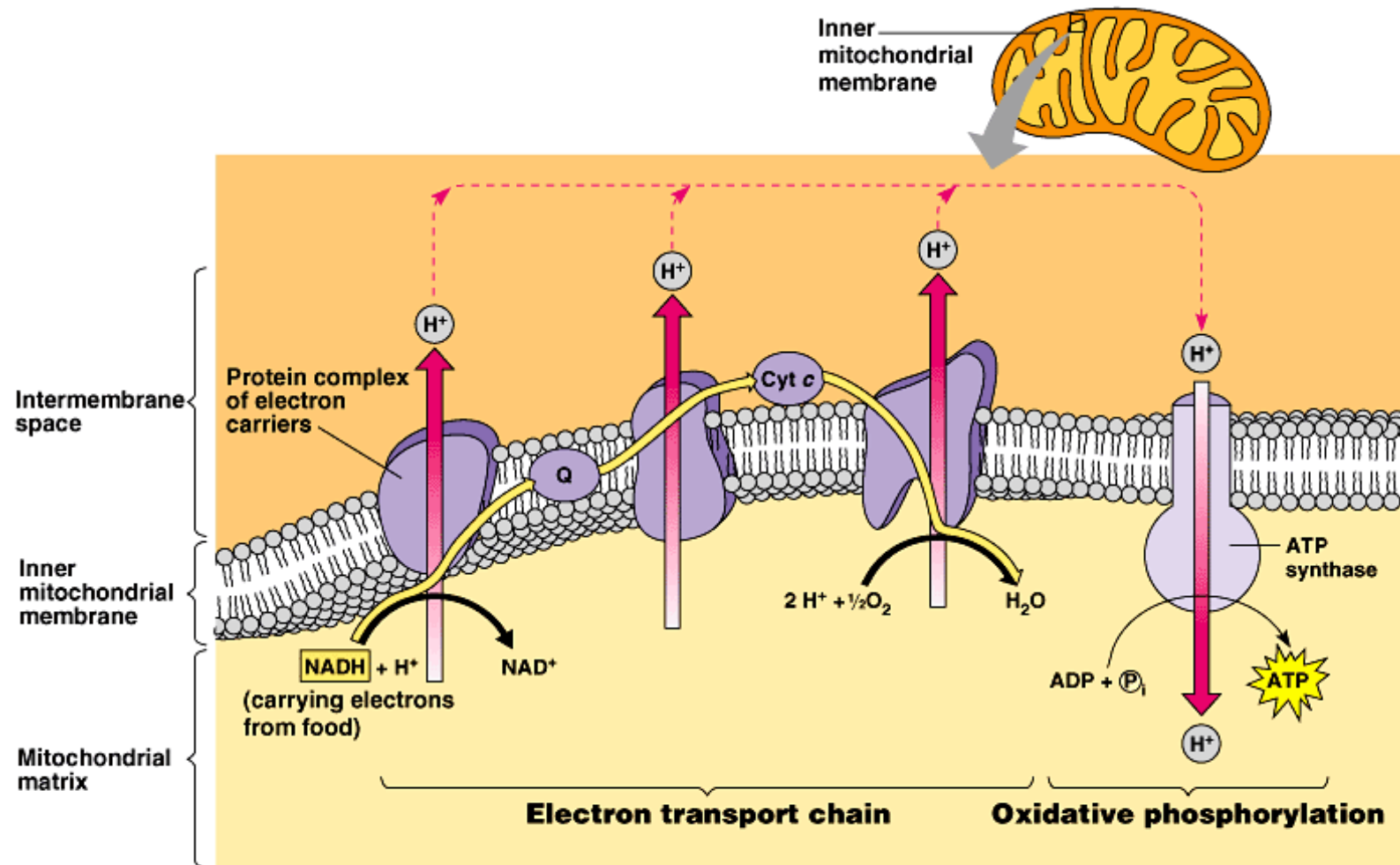
Electron Transport Chain is located on the inner FOLDED membrane



Electron Transport Chain moves 2 electrons at a time toward Oxygen (Proteins are **H⁺ Pumps**)

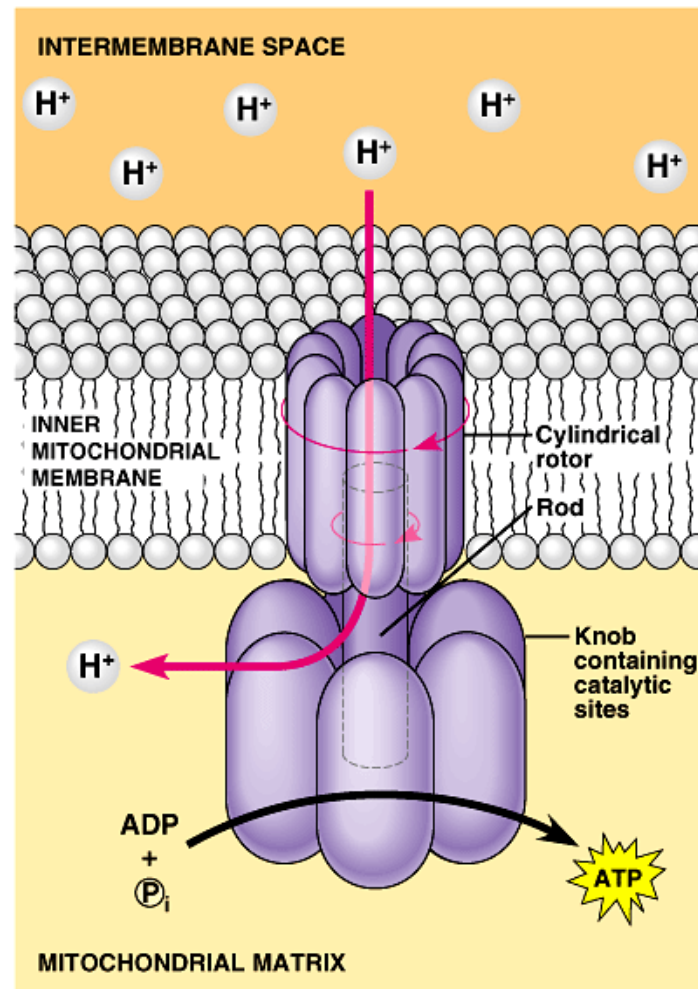


Pumping H^+ into a confined space
See the H^+ being *pumped* by the purple proteins
into the orange confined space?



ATP Synthetase Complex

Use the *kinetic* movement of protons (H^+) to power the phosphorylation of $ADP \rightarrow ATP$.



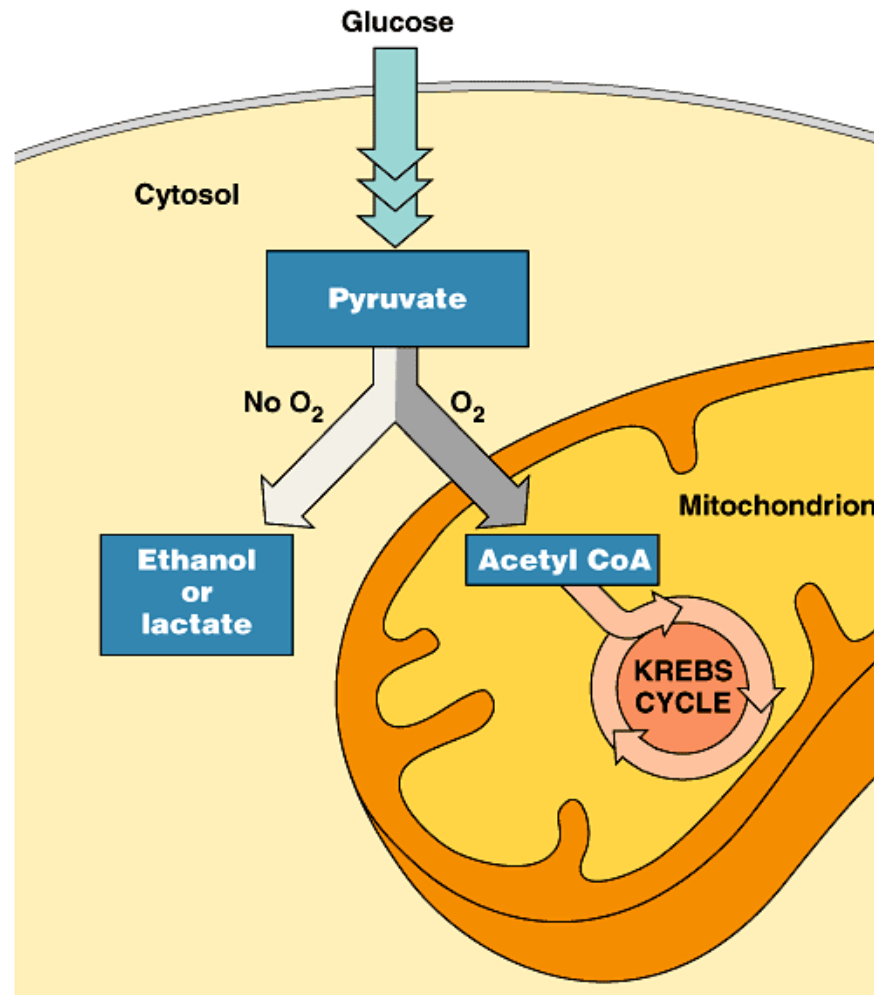
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Pre AP Biology

Cellular Respiration 3.2

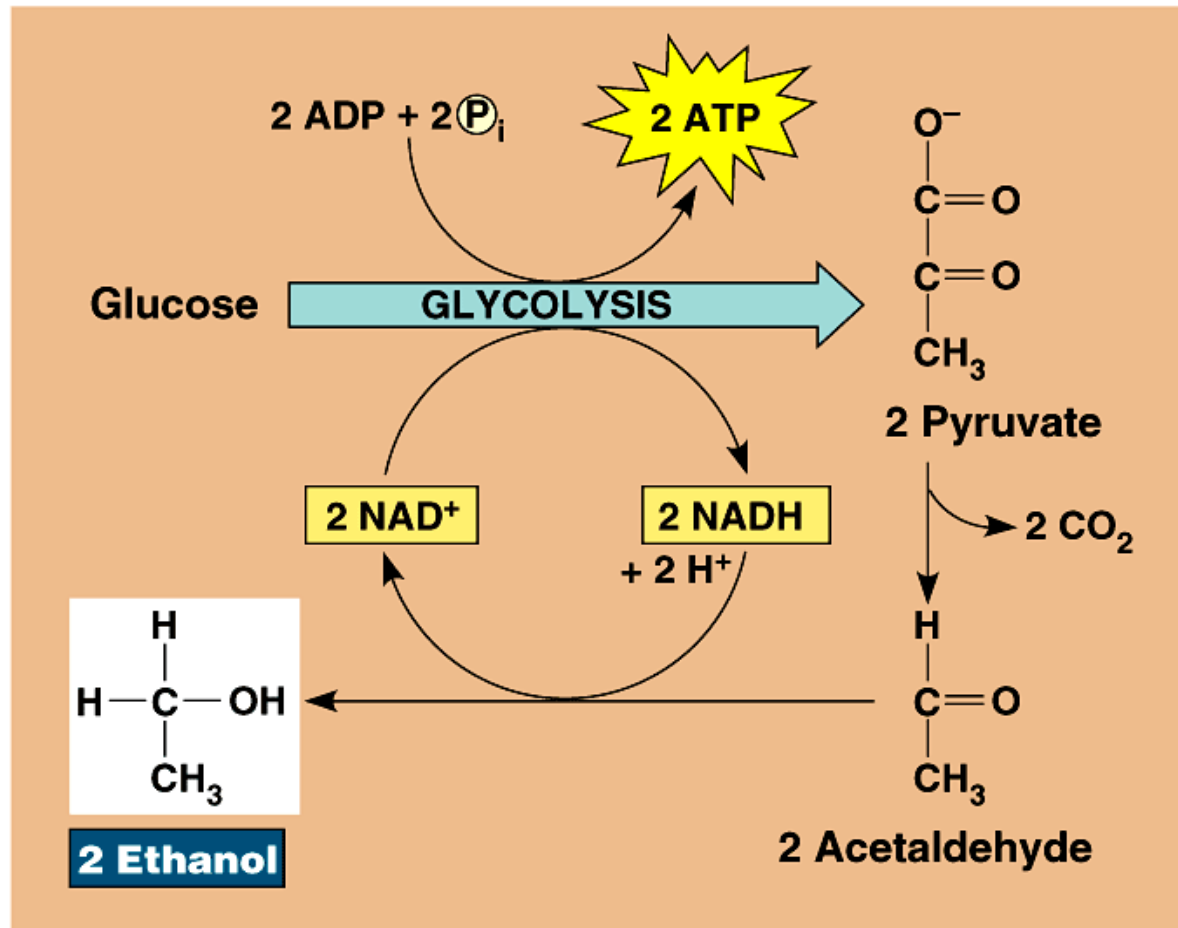
Part 3

Is Oxygen present?



Alcohol Fermentation

To free up the electron carrier NADH

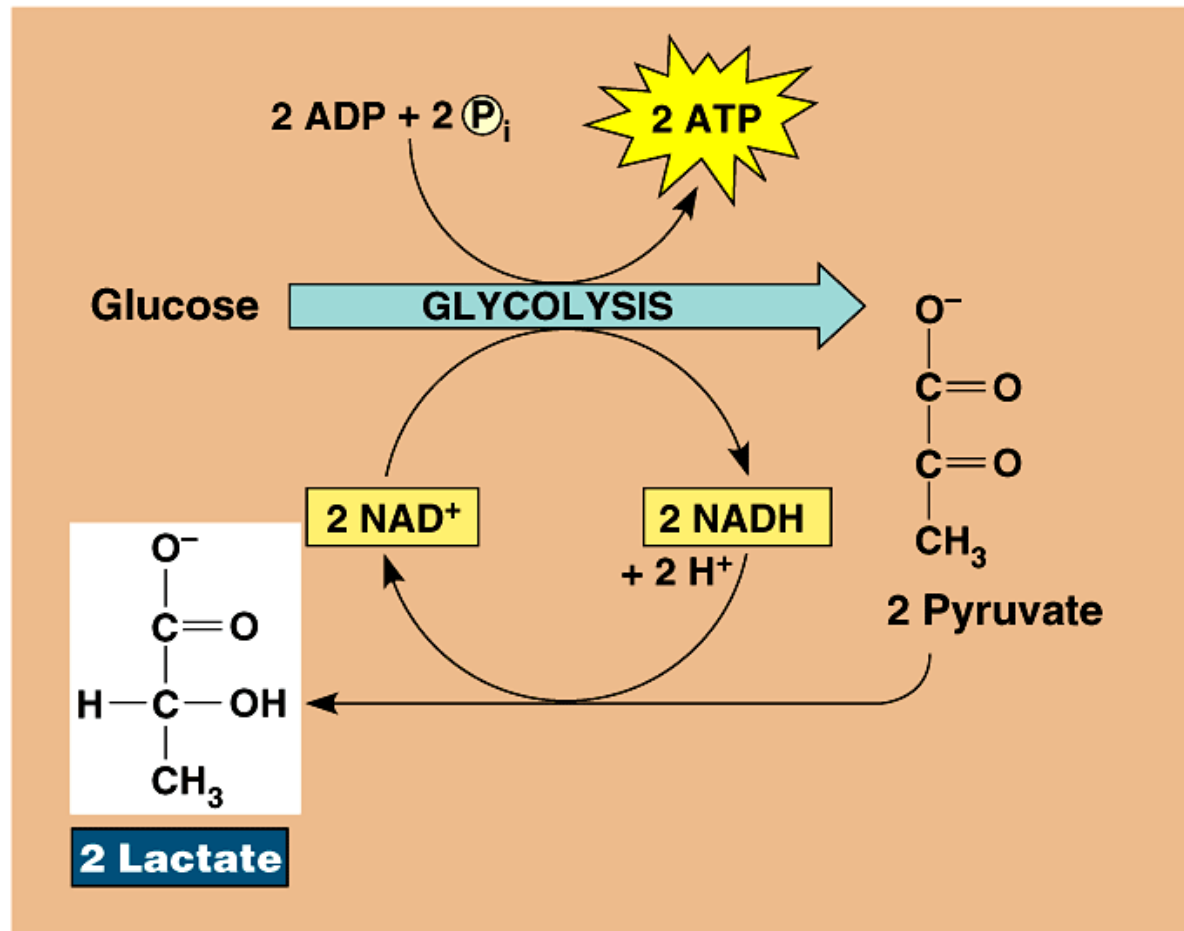


(a) Alcohol fermentation

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Lactic Acid Fermentation

To free up the electron carrier NADH

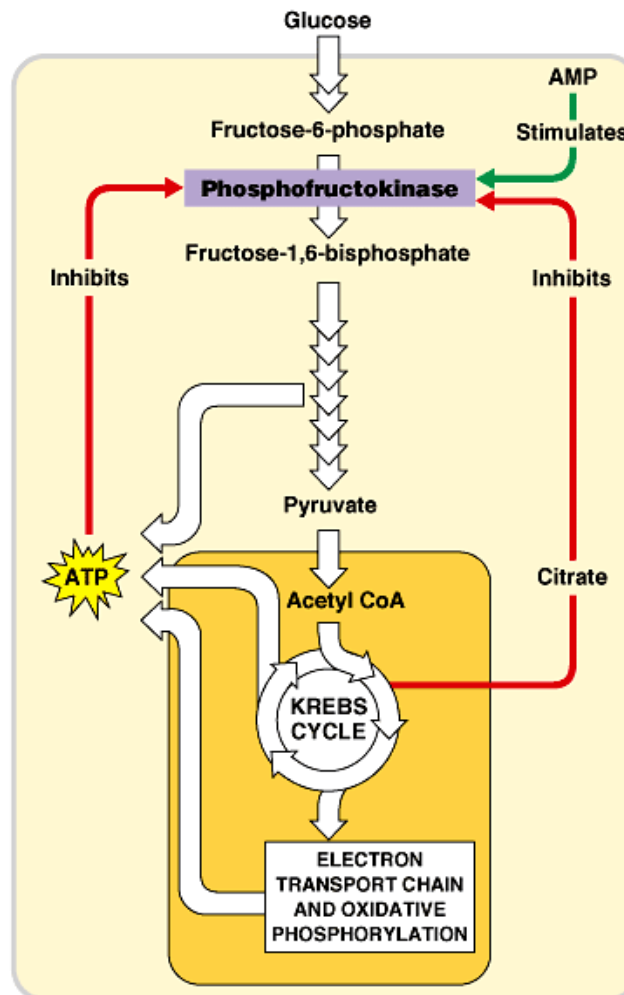


(b) Lactic acid fermentation

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Negative Feedback

Once the cell has made *enough ATP*, the *excess* goes back to shut off the on/off switch (Phosphofructokinase)



Phosphofructokinase

- (Puts on the SECOND ATP and acts as the on/off switch.)

If the second ATP is not used, the glucose *will not* get broken in half to become G3Ps.

