

Cellular Respiration

Aerobic

Aerobic = WITH oxygen

Anaerobic = without oxygen

(Remember: Photosynthesis gives off O₂ and sugar.)

- the end products of photosynthesis contribute to cellular respiration, and vice versa.

Cellular Respiration - the process ~~of~~ ^{that} releases energy by breaking down food molecules in the presence of OXYGEN (aerobic).

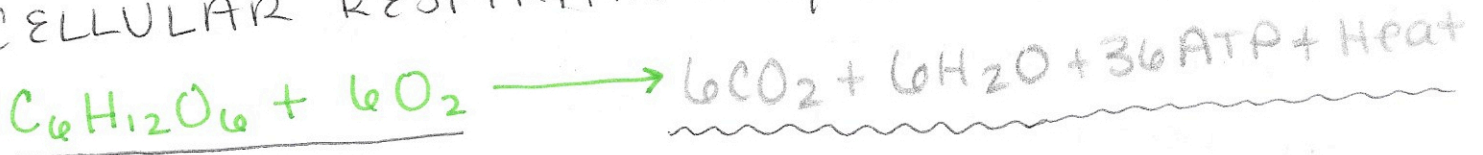
- in eukaryotic AND prokaryotic cells
- makes ATP and heat
- Uses O₂ and Glucose → CO₂, Water and Energy

TAKE A LOOK:

Photosynthesis Equation



CELLULAR RESPIRATION Equation:



3 main stages:

1. Glycolysis
2. Citric Acid Cycle
3. Oxidative Phosphorylation

1. Glycolysis

- ~~where~~ "splitting sugars" ($C_6 = C_3$ and C_3)

- can be aerobic or anaerobic
- happens in the cytosol
- releases NADH

• yields 2 ATP and 2 molecules of pyruvate

mitochondria membrane

pyruvate \rightarrow acetyl coA

2. Citric Acid Cycle (aka KREB cycle, or TCA)

- pyruvate transforms into acetyl coA
- gives off CO_2
- MITOCHONDRIA!
- releases ~~uses~~ NADH and FADH
- makes 2 ATP

• occurs when O_2 present, but not necessary

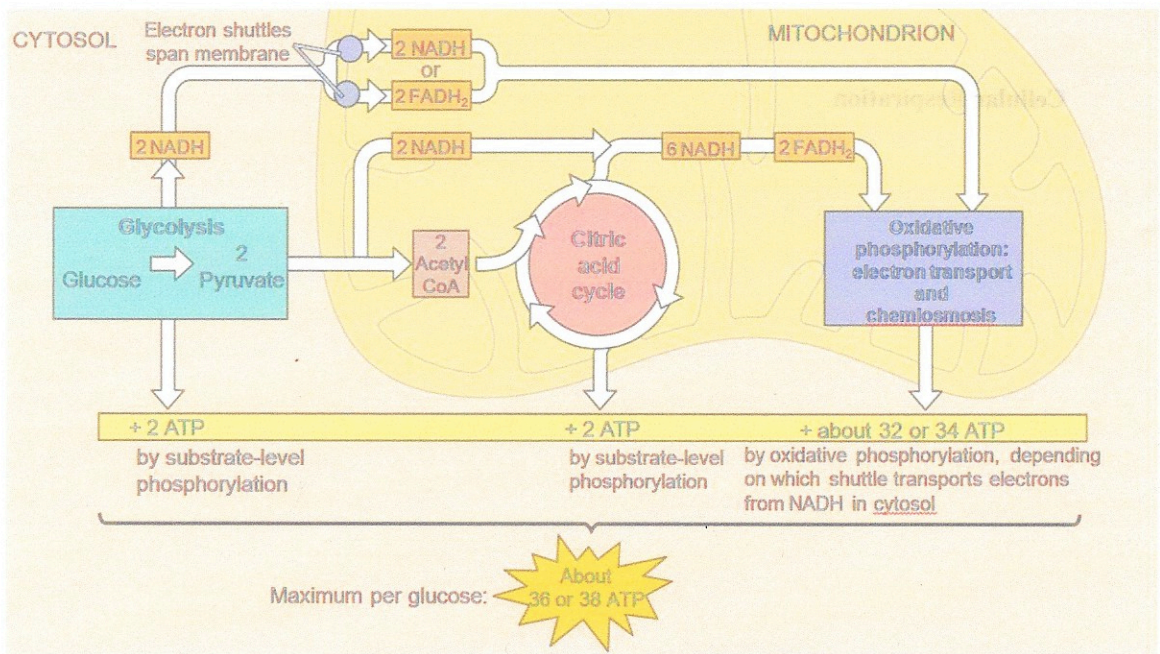
3. Oxidative Phosphorylation (aka Electron Transport Chain)

- MITOCHONDRIA
- requires O_2
- uses the NADH and FADH from glycolysis and Citric Acid cycle to make ATP
- gives off water
- yields ~~32 to 34~~ ATP
32 to 34

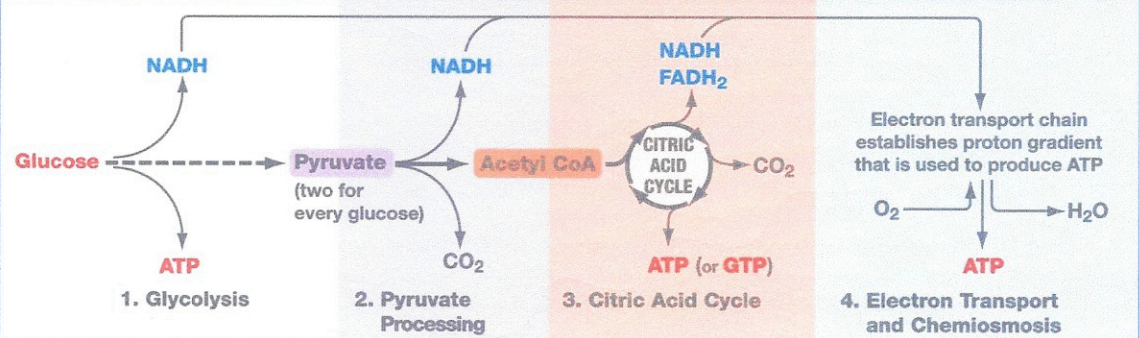
Glycolysis = 2 ATP
Citric Acid = 2 ATP
Ox. Phosph. = 32 to 34 ATP
= 36 or 38 ATP

Reactants: O_2 + glucose

Products: CO_2 H_2O ATP



PROCESS: OVERVIEW OF CELLULAR RESPIRATION



What goes in:
What comes out: