Aerobic vs Anaerobic Respiration

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AEROBIC

AERO + BIC

AIR / OXYGEN + LIVING

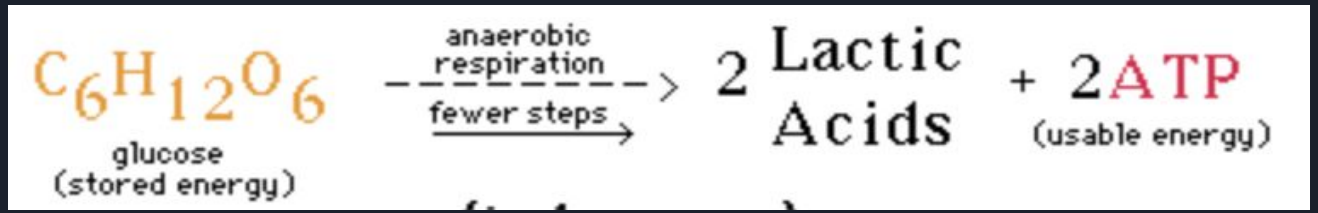
ANAEROBIC

AN + AERO + BIC

NOT + AIR/OXYGEN + LIVING

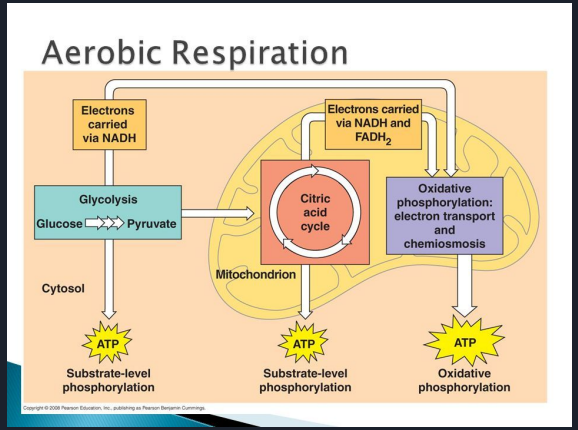
Aerobic: respiration that takes place in the presence of oxygen

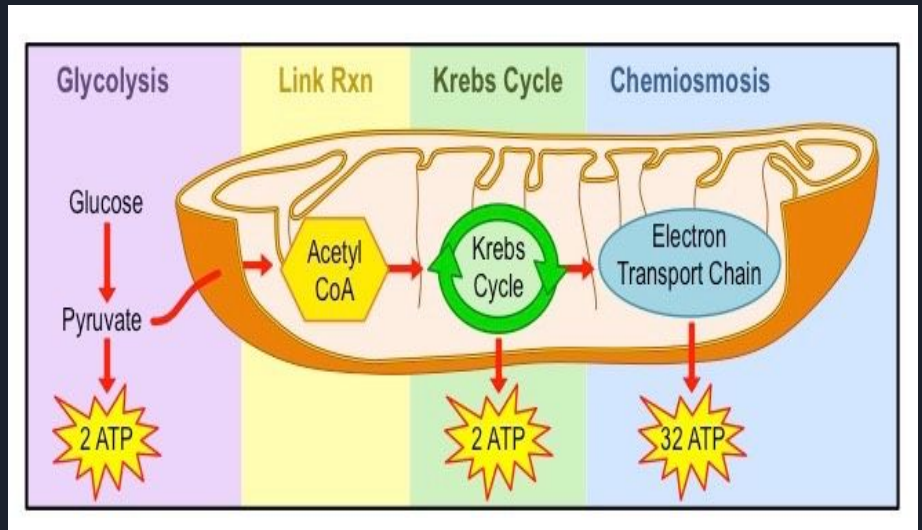
Anaerobic: respiration that takes place WITHOUT the presence of oxygen



Stages of aerobic respiration

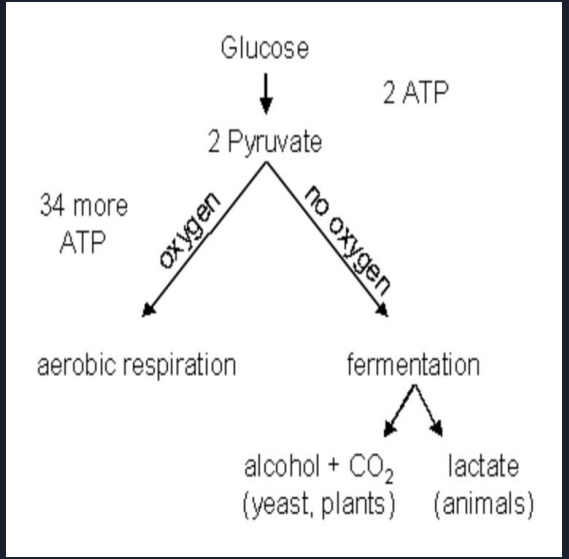
1) GLYCOLYSIS
   - breakdown of glucose into ATP and NADH
2) FORMATION OF ACETYL CoA
   - Pyruvate gets oxidized —> creates carbon acetyl group
   - Binds with Coenzyme A — creates acetyl CoA
3) Krebs cycle
   - Oxaloacetate combines with acetyl CoA
   - 2 cycles — 2 ATP, 6 NADH, 2 FADH
4) ETC
   - NADH and FADH donate electrons
   - 32 ATP molecules produced





Stages of anaerobic respiration

1) GLYCOLYSIS
   - Breakdown of glucose into ATP and NADH
2) FERMENTATION
   - Fermentation —> lactic acid (animals)
   - Fermentation —> alcohol + CO2 (yeast, plants)



Summary and Comparison

	Anaerobic	Aerobic
Reactants	Glucose	Glucose **and** oxygen
Combustion	Incomplete	Complete
Energy Yield	Low (2 ATP)	High (36 – 38 ATP)
Products	**Animals:** Lactic acid **Yeast:** Ethanol + CO_2	CO_2 and H_2O
Location	Cytoplasm	Cytoplasm **and** mitochondrion
Stages	Glycolysis Fermentation	Glycolysis Link reaction Krebs cycle Electron transport chain

Works Cited

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