**ATP (ADENOSINE TRIPHOSPHATE) 11/12/18**

 STORES POTENTIAL ENERGY FOR CELLULAR ACTIVITY



ATP SYNTHASE – ENZYME THAT CREATES ATP

 MOVES H+ ions ACROSS A CONCENTRATION GRADIENT IN THE MITOCHONDRIA.

PLANTS – USE LIGHT ENERGY TO FORM ATP IN CHLOROPLASTS

ANIMALS – USE ENERGY FROM RESPIRATION IN THE MITOCHONDRIA

3 USES FOR ATP

1. ACTIVE TRANSPORT (EXAMPLE: SODIUM/POTASIUM PUMP)
2. MUSCLE CONTRACTIONS
3. POLYMER SYNTHESIS (MAKING LARGE MACROMOLECULES LIKE PROTEINS)

**PHOTOSYNTHESIS 11/13/18**

AUTOTROPHS – “SELF FEEDERS”, PRODUCERS

 PHOTOAUTOTROPHS – USE LIGHT (PLANTS, ALGAE)

 CHEMOAUTOTROPHS – USE SULPHER OR AMONIA (BACTERIA)

HETEROTROPHS – “OTHER FEEDERS”, CONSUMERS

CHLOROPLASTS – SITE OF PHOTOSYNTHESIS

 CONTAINS CHLOROPHYL WHICH ABSORBS MOST LIGHT – NOT GREEN

 $CO\_{2}$ – IN FROM THE STOMATA $H\_{2}O$– FROM ROOTS

 THYLAKOID – SITE OF LIGHT RxN

 STROMA – SITE OF CALVIN CYCLE

OVERALL RxN OF PHOTOSYNTHESIS

$$6H\_{2}O+6CO\_{2} = C\_{6}H\_{12}O\_{6}+6O\_{2}$$

FROM PRODUCTS OF PHOTOSYNTHSIS PLANTS MAKE:

FOOD: GLUCOSE STRUCTURE: CELULOSE



**RESPIRATION 11/15/18**

CATABOLIC PROCESS; BREAKDOWN OF SUGARS

MITOCHONDRIA – SITE OF RESPIRATION

$O\_{2}$ **–** FROM LUNGS $C\_{6}H\_{12}O\_{6}$– FROM FOOD CONSUMED

OVERALL RxN OF RESPIRATION

$$C\_{6}H\_{12}O\_{6}+6O\_{2} \rightarrow 6H\_{2}O+6CO\_{2}+38ATP$$

**3 STAGES OF AEROBIC RESPIRATION**

1. **GLYCOLYSIS** (*CYTOPLASM*)

SPLITTING OF SUGAR (1) 6-C SUGAR (*glucose*) $\rightarrow $(2) 3-C SUGARS (*pyruvic acid*)

NO OXYGEN PRESENT OR REQUIRED

* NET GAIN OF 2 ATP’s
1. **KREBS CYCLE** (*MITOCHONDRIAL MATRIX*)

PYRUVIC ACID IS FORMED INTO CITRIC ACID AND SLOWY BROKEN DOWN

* NET GAIN OF 2 ATP’s
* CO2 RELEASED
1. **ELECTRON TRANSPORT CHAIN** (*MITOCHONDRIAL MEMBRANE*)
* 34 ATP’s
* H2O RELEASED

**ANAEROBIC RESPIRATION “FERMENTATION”**

NO OXYGEN GLYCOLYSIS SHUTS DOWN

* NET GAIN OF 2 ATP’s

TWO KINDS OF FERMENTATION

1. LACTIC ACID FERMENATION

PYRUVATE GETS CONVERTED INTO LACTATE

REQUIRES OXYGEN TO BREAK DOWN LACTATE

1. ALCOHOLIC FERMENTATION

ETHYL ALCOHOL IS PRODUCED

CO2 RELEASED

