

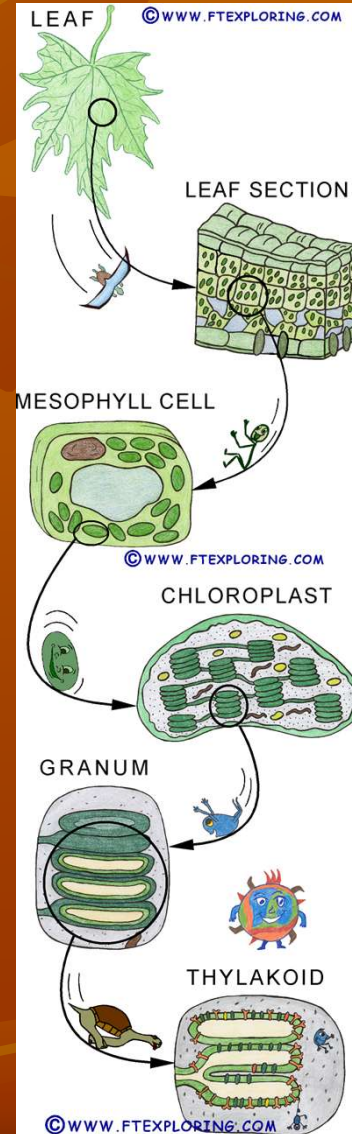
# **Photosynthesis and Respiration**

# Photosynthesis

- Plants use CO<sub>2</sub>, H<sub>2</sub>O & sunlight to make O<sub>2</sub> & glucose (energy)
- $6\text{CO}_2 + 6\text{H}_2\text{O} \xrightarrow{\text{light}} \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$
- Carbondioxide + water  $\xrightarrow{\text{light}}$  glucose + oxygen

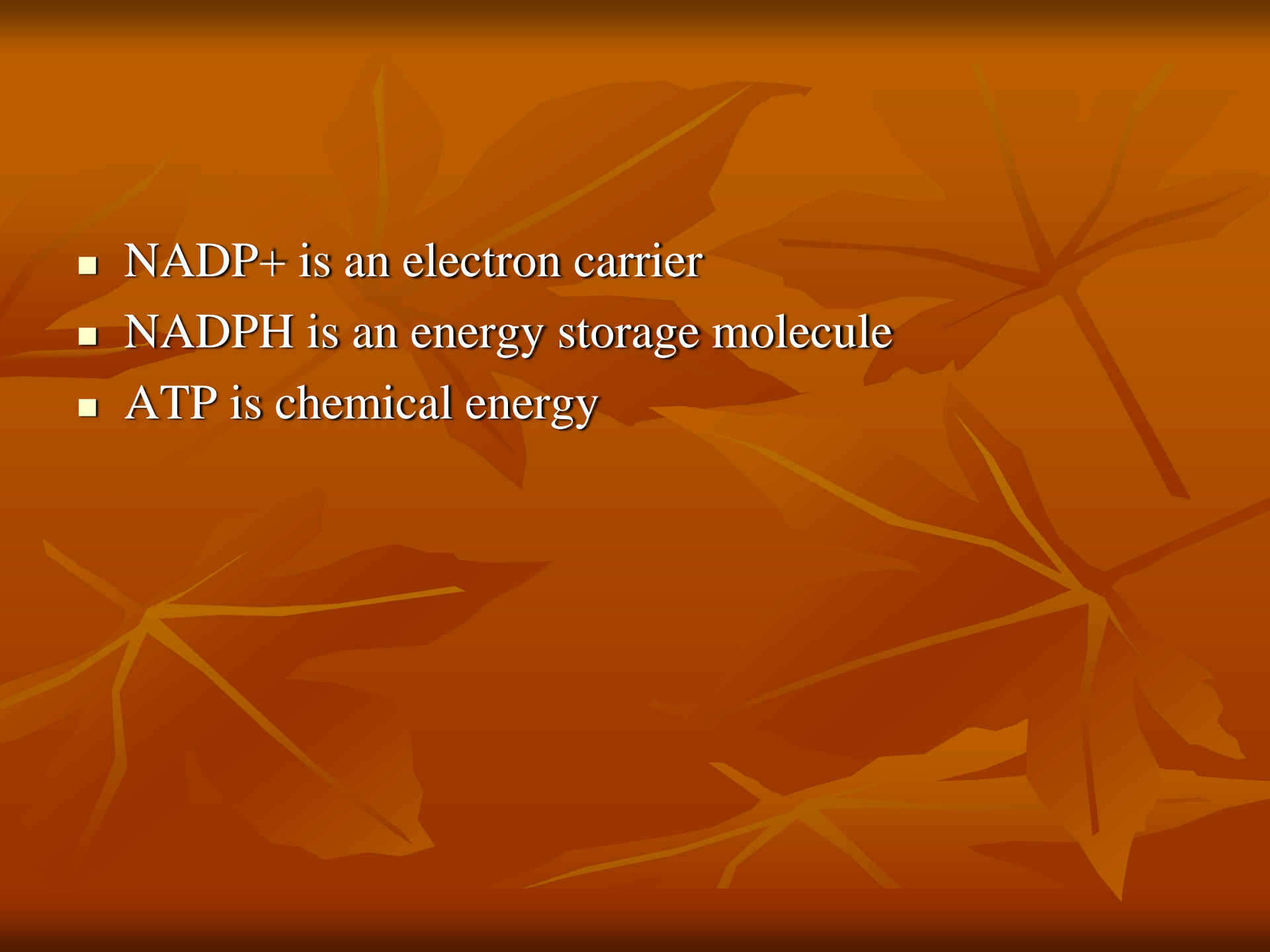
# Photosynthesis Plant Parts

- Thylakoid = flat & sack like
- Grana = stacks of thylakoids
- Stroma = fluid filled space outside of grana. Site of light independent reaction

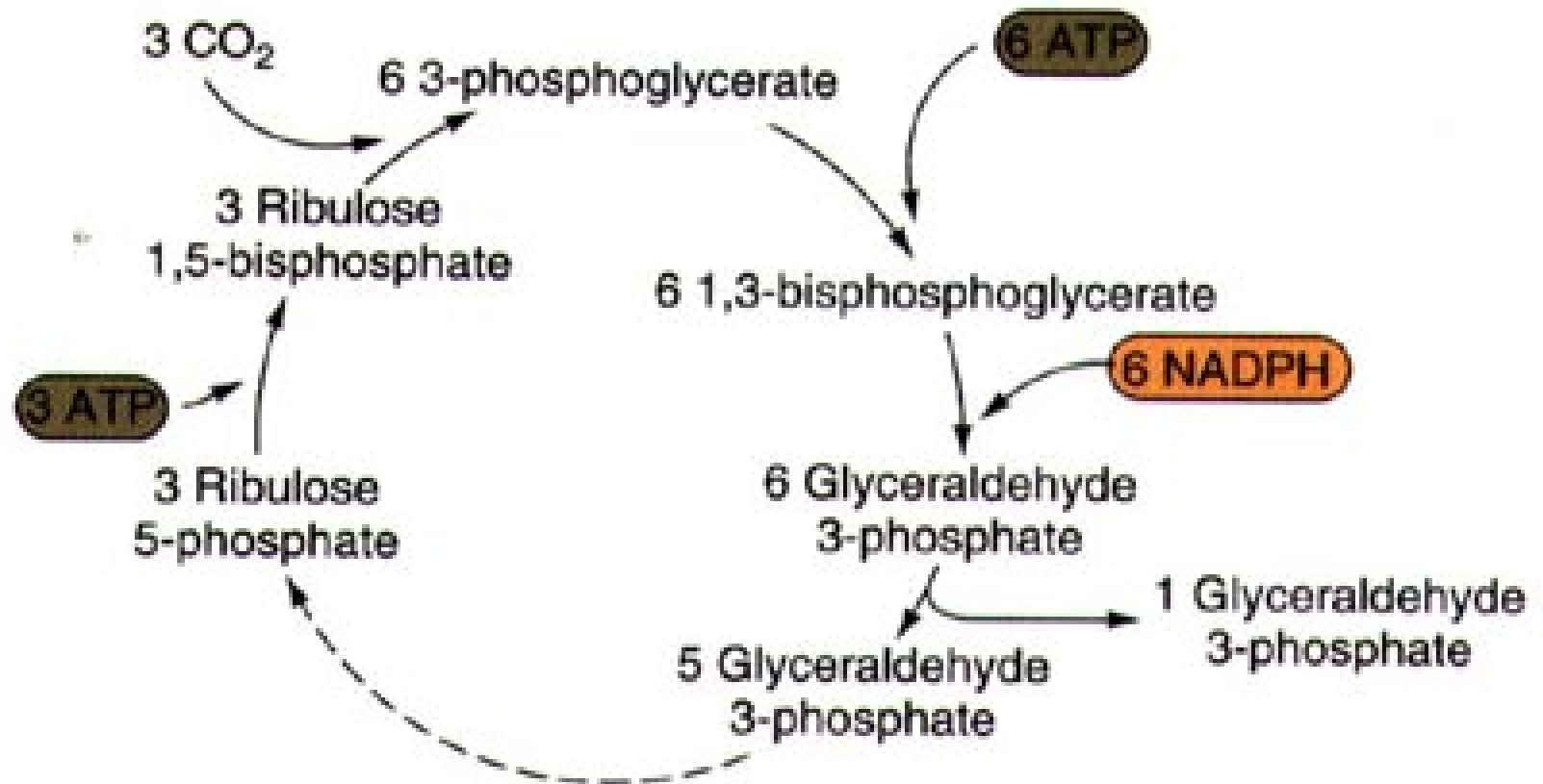


# Phase I: Light Dependent Reaction

- Electrons move from inside the thylakoid to outside
- A water molecule is split in to  $H_2$  &  $O_2$
- The electron is transferred to  $NADP^+$  which will then make NADPH
- When protons ( $H^+$ ) move through the thylakoid membrane ADP is turned in to ATP

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- NADP<sup>+</sup> is an electron carrier
  - NADPH is an energy storage molecule
  - ATP is chemical energy

# Phase II: Dark Reaction or the Light Independent Reaction (the Calvin Cycle)



# Two Other Pathways

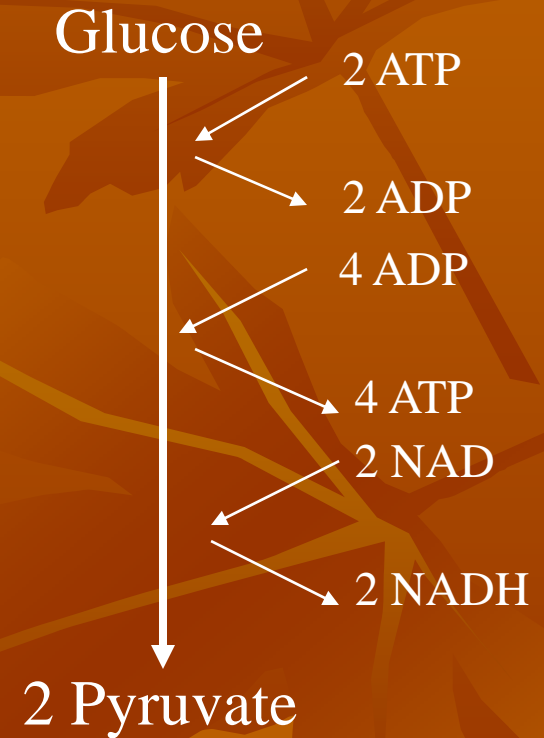
- C4 = for plants such as corn and sugar cane to avoid the lose of water
- CAM = for water conserving plants such as cacti and pinapple

# Respiration

- Animals use glucose and oxygen to make carbon dioxide, water and energy
- $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O + \text{energy}$
- glucose + oxygen  $\rightarrow$  Carbondioxide + water +energy

# Glycolysis

- An anaerobic process (oxygen is not required) this has in cytoplasm
- Takes place in the cytoplasm



# The Krebs Cycle

- Aerobic Respiration (must have Oxygen)
- Pyruvate goes to Mitochondria
- Pyruvate breaks down to CO<sub>2</sub>
- Net gain is 6 CO<sub>2</sub>, 2 ATP, 8 NADH, 2 FADH

# Electron Transport

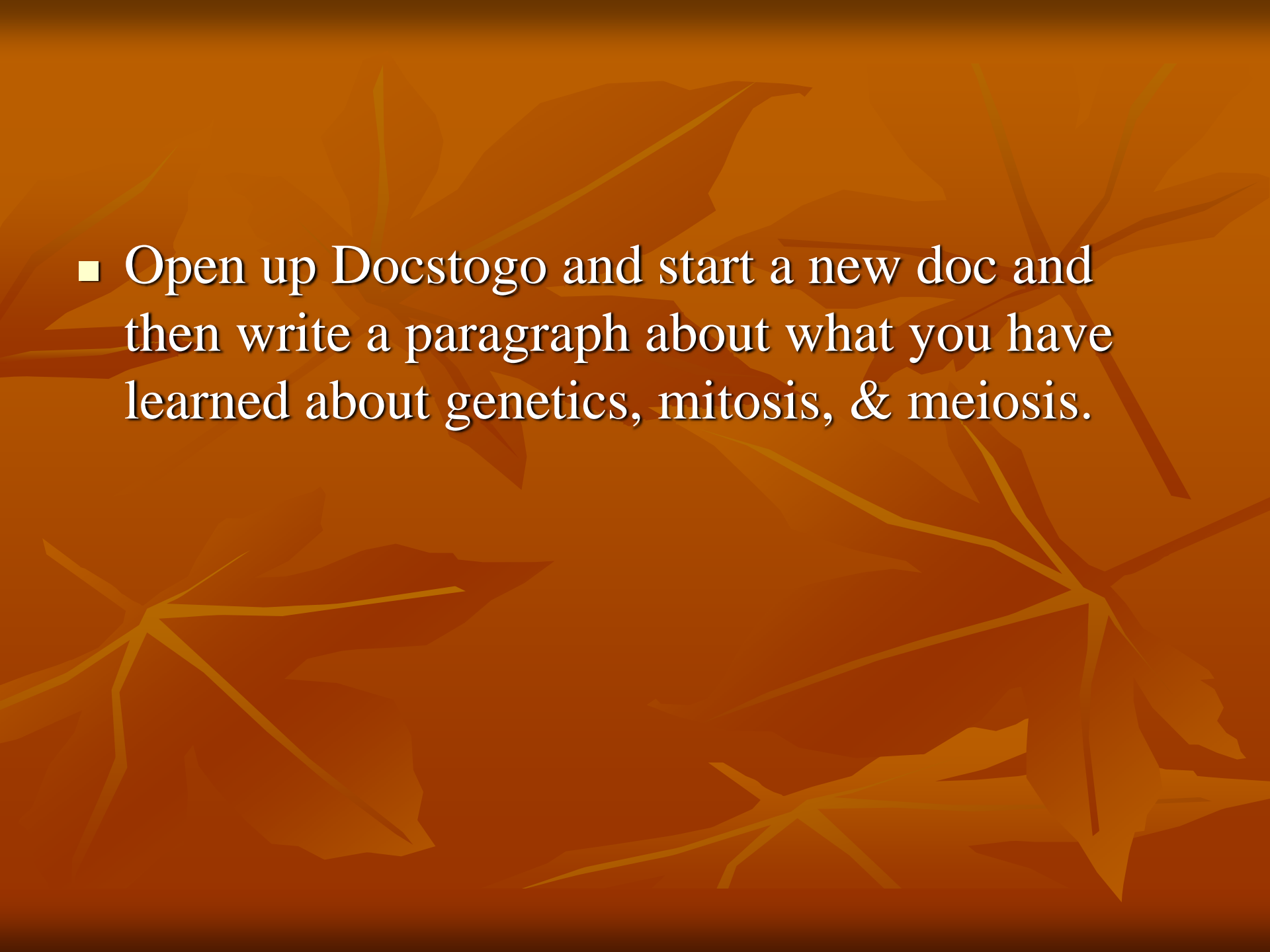
- Final step to break down glucose
  - Most ATP made here
  - NADH & FADH<sub>2</sub> convert to ADP to ATP
  - Electrons move along a transport chain
  - Formation of H<sub>2</sub>O
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- **Net gain = 36 ATP**

# Anaerobic Respiration

- Fermentation:
  - In the cytoplasm and regenerates the cell's supply of NAD and a small amount of ATP
- Lactic acid fermentation:
  - Converts pyruvate to lactic acid
  - Muscles produce it when O<sub>2</sub> is in low supply
  - Lactic acid builds up muscles fatigue and become sore
- Alcohol fermentation:
  - Occurs in yeast and some bacteria
  - Pyruvate is converted to ethyl alcohol and CO<sub>2</sub>

# Flashcard

- Chlorophyll
- Photosynthesis
- Cellular respiration
- Cell theory
- Organelles
- Osmosis
- Diffusion
- Homeostasis
- Active transport
- Organic
- Fermentation
- Cell membrane
- Nucleus
- Cell wall
- Microorganism

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- The background of the slide features a pattern of stylized, overlapping leaves in various shades of orange and yellow, creating a warm, autumnal aesthetic.
- Open up Docstogo and start a new doc and then write a paragraph about what you have learned about genetics, mitosis, & meiosis.