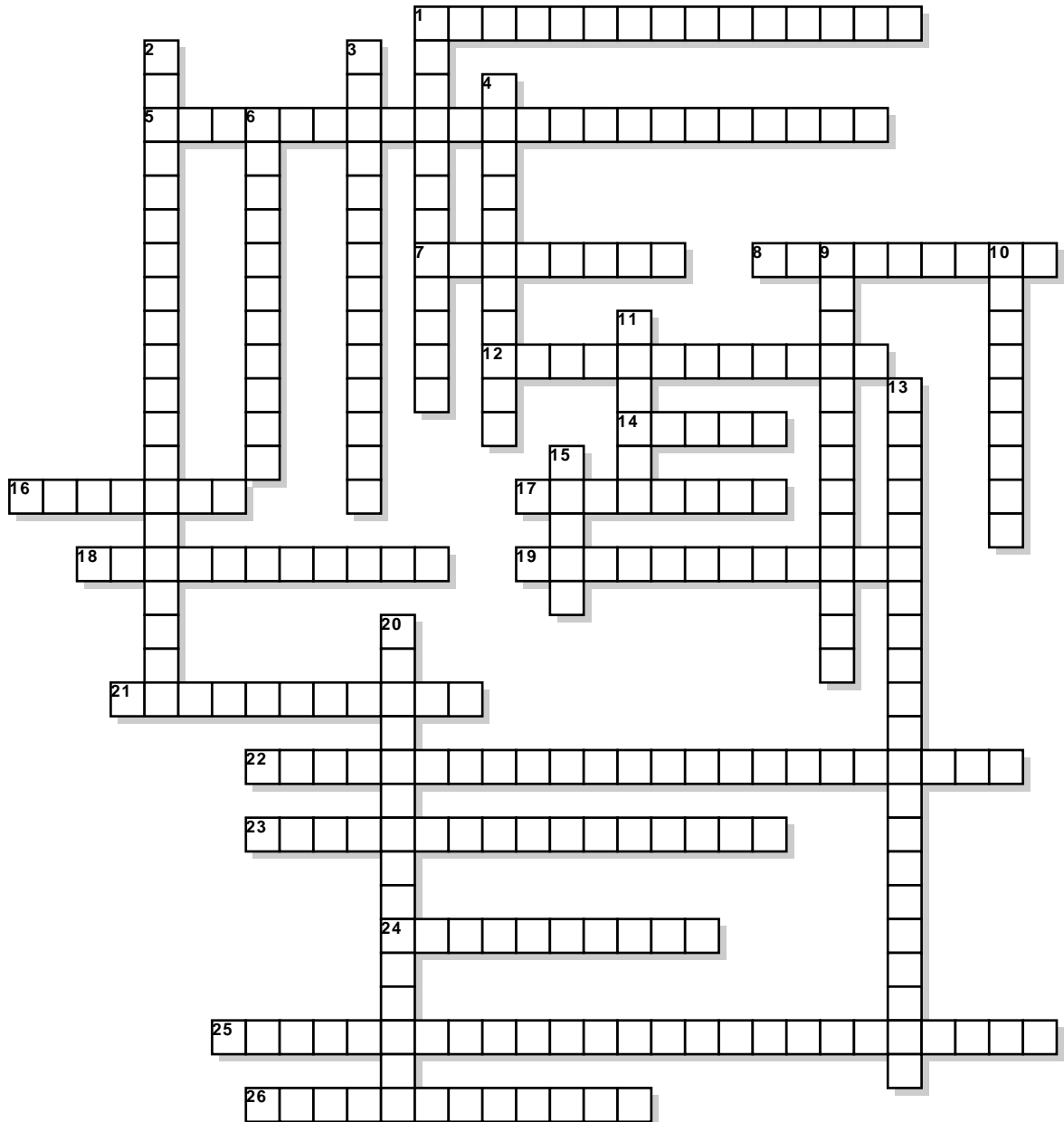


Biology Crossword Puzzle 8



Across

- 1 Uses the energy of sunlight to convert water and carbon dioxide (reactants) into high-energy sugars and oxygen (products).
- 5 A series of electron carrier proteins that shuttle high-energy electrons during ATP-generating reactions.
- 7 The ultimate source of energy for plants. Makes all life possible.
- 8 Anything produced in the course of making another thing.
- 12 Photosynthesis takes place in these organelles which contain saclike membranes called thylakoids and outside the thylakoids is a fluid portion known as the stroma.
- 14 Converts to NADPH to trap sunlight as chemical energy. A high energy electron carrier that can move energy to help build molecules like carbs (glucose/sugar and starches).
- 16 ATP is great for transferring energy but not storing. Glucose stores 90 x more energy than required to add phosphate group to turn ADP --> ATP.
- 17 Plants gather the sun's energy with light-absorbing molecules called pigments.
- 18 Spans the thylakoid membrane and allows H⁺ ions to pass forcing it to rotate like a turbine and produce ATP. Process is known as chemiosmosis.
- 19 Thylakoids contain clusters of chlorophyll and proteins known as photosystems which absorb sunlight and generate high-energy electrons.
- 21 Considered heterotrophs because they get energy from breaking down other living things - not from the sun.

Down

- 1 Pigments in this system use energy from light to reenergize electrons depleted from pumping H⁺ ions across the thylakoid membrane.
- 2 Looks almost like ATP except it has two phosphate groups instead of three. Works like a rechargeable battery when cells add phosphate groups --> ATP.
- 3 The process by which autotrophs use the energy of sunlight to produce high-energy carbohydrates- sugars and starches - that can be used as food. Plants convert energy of sunlight into chemical energy stored in bonds of carbs.
- 4 During the light-independent reactions ATP and NADPH from the light-dependent reactions are used to produce high-energy sugars. Uses 6 molecules of carbon dioxide to produce a single 6-carbon sugar molecule. Removes CO₂ from atmosphere.
- 6 Plants principle pigment used to capture energy from the sun. Chlorophyll a absorbs blue-violet wavelengths and chlorophyll b absorbs red wavelengths. Does not absorb green - reflects.
- 9 Hydrogen atoms begin to accumulate in the thylakoid space which makes stroma negatively charged . This gradient (the difference in both charge and H⁺ ion concentration) provides the energy to make ATP.
- 10 Crassulacean Acid Metabolism (CAM) plants admit air only at night so leaves can be tightly sealed during the day to prevent moisture loss. (Cacti, etc).
- 11 Thylakoids are interconnected and arranged in stacks known as granum. Pigments are in the thylakoid membranes.

Across

- 22 First step in photosynthesis - require direct involvement of light and light-absorbing pigments ADP and NADP+ --> ATP and NADPH. Requires water as a source of electrons and hydrogen ions and gives off oxygen as a byproduct.
- 23 C4 plants have a specialized chemical pathway that allows them to capture even low levels of CO₂ and pass to the Calvin Cycle.
- 24 Organisms that make their own food through photosynthesis.
- 25 ATP and NADPH are used to produce high-energy sugars from carbon dioxide. (No light is required) Takes place in the stroma outside the thylakoids.
- 26 Organisms that get their food by absorbing other living things. (i.e. Plants, animals, decomposers).

Down

- 13 A type of bio-chemical fuel. An important compound that cells use to store and release energy. Basic energy source for all cells.
- 15 What our eyes perceive as "white" light is a mixture of different wavelengths (ROYGBIV).
- 20 A compound that can accept a pair of high-energy electrons and transfer them, along with most of their energy, to another molecule. (Like mitts moving a hot potato).

Possible Answers:

adenosine diphosphate, adenosine triphosphate, ATP Synthase, autotrophs, byproduct, C4 photosynthesis, Calvin Cycle, CAM Plants, chlorophyll, chloroplasts, decomposers, electron carrier, electron transport chain, glucose, granum, heterotrophs, light, Light Dependent Reactions, light independent reactions, NADP +, photosynthesis, photosynthesis 2, Photosystem 1, Photosystem II, photosystems, Pigments, sunlight