

Teacher Notes & Answer Key: How Does Energy Change Form?

Questions:

1. Photosynthesis occurs in two separate stages. The first stage requires light, so it's called the "light dependent" stage. What happens to the energy from the sun (photons) during this stage? Describe its change in form. HINT: A good way to think about the light dependent stage is to think of it as the "energy building" stage.

During the light dependent stage a series of reactions occurs that transfers the light energy in photons over to electrons. These electrons become highly energized, and they are carried to the next stage of photosynthesis by 'energy carrier molecules'. These energy carrier molecules are NADPH and ATP.

2. The second stage of photosynthesis is called the Calvin Cycle. The Calvin Cycle can occur any time of day or night, so it's sometimes called the 'light independent' stage. The Calvin Cycle picks up where the light dependent stage left off, transferring energy from one type of molecule to another. In what form is energy stored at the end of the Calvin Cycle? HINT: A good way to think about the Calvin Cycle is to consider it the "sugar building" stage.

During the Calvin Cycle, the energy carrier molecules transfer the energy over to molecules of glucose. Glucose is the end product of the Calvin Cycle.

3. What is the purpose of cellular respiration?

The purpose of cellular respiration is to release the stored energy of glucose and transfer it to an easy-to-use energy molecule, ATP.

4. During cellular respiration the energy of one molecule gets passed on to another molecule. Which energy molecule does cellular respiration start with? Which energy molecule does it end with?

The process starts with glucose and ends with ATP.