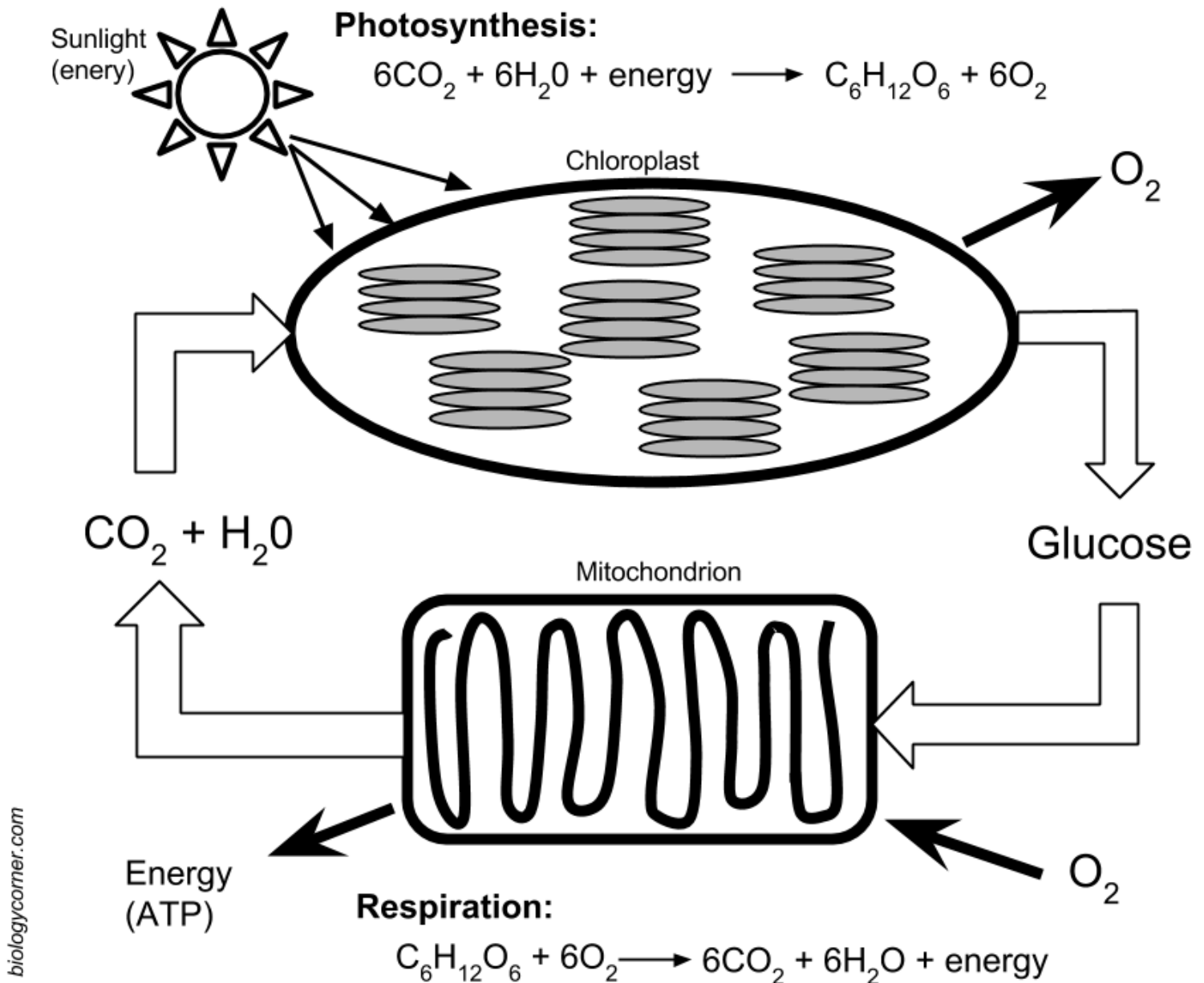


Photosynthesis and Respiration Model

Essential Question: What is the relationship between photosynthesis and respiration?

Scientific modeling is an activity that aims to make the world easier to understand. There are many types of models, some are mathematical, and some are graphical models that help us visualize the subject. The graphic below is a model that attempts to show the interdependence of two cellular processes: respiration and photosynthesis.

Your goal is to examine the model, focus on the key details to answer the essential question.



I. Examine Details

1. In what cell organelle does photosynthesis occur?
2. What are the three things needed for photosynthesis? *Highlight them on the diagram in green.*
3. What are the two products of photosynthesis? *Highlight yellow.*
4. In what cell organelle does cellular respiration occur?
5. What are the two things needed for cellular respiration? *Highlight blue.*
6. What are the three products of cellular respiration? *Highlight purple.*
7. What things are recycled (used over and over again) during photosynthesis and respiration?

II. Apply (what you already know)

8. Sketch a *model* of typical plant cell and identify the mitochondria and chloroplasts.
9. What will happen to plants that are kept in the dark?
10. What will happen if you forget to water your plants?
11. What happens to animals that are deprived of oxygen?

III. Big Ideas

12. One hypothesis regarding the extinction of dinosaurs is that a meteor hit the earth causing an explosion so powerful that dust blocked out the sun. Consider the model above and explain why would this have caused a mass extinction?

13. When you walk your dog, you are using energy from the sunlight to power this activity. Explain.

14. Carefully and completely answer the "essential question" of this activity. Use complete sentences and details from the model to explain your position.

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