

Cross-Curricular Discussion: Q

Directions: The following list of discussion questions is provided to help you take notes, brainstorm ideas and test your thinking in order to be more actively engaged in class discussions related to this article. All questions in this section are related to topics covered in "[Photosynthesis reinvented](#)" and "[How plants hunt water](#)."

BIOLOGICAL SCIENCES**Discussion questions:**

1. What are chloroplasts?

Extension prompts:

2. What are the light reactions in chloroplasts and what do they make?

3. What are the dark reactions in chloroplasts and what do they make?

4. What are the dark reactions outside of chloroplasts in plant cells and what do they make?

CHEMICAL SCIENCES

You may want to explore the “Chemistry and Other Physical Sciences Discussion Q” in the [Built for Speed Educator Guide](#) if you are interested in additional questions about catalysts and activation energy.

Discussion questions:

- 1. How does an atom absorb light energy? What about molecules?**
- 2. Why does chlorophyll a appear green? What wavelength(s) of light does it absorb?**

Extension prompts:

- 3. What is chlorophyll a and how does its structure relate to its function?**
- 4. What is electrolysis and how can electrolysis of water be demonstrated?**

PHYSICAL SCIENCES

Discussion questions:

- 1. How much energy is in light? Explain and give specific examples for red and violet light.**

2. Why does chlorophyll a appear green? What wavelength(s) of light does it absorb?

Extension prompts:

3. How do photovoltaic panels (solar cells) work?

ENGINEERING AND EXPERIMENTAL DESIGN

Discussion questions:

1. What are some possible extensions and applications that you can think of for Chong Liu's technology?

2. What are some possible extensions and applications that you can think of for José Dinneney's technology?

Extension prompts:

3. What would inspire more students to become scientists? What has inspired you to pursue an academic endeavor in your life?