
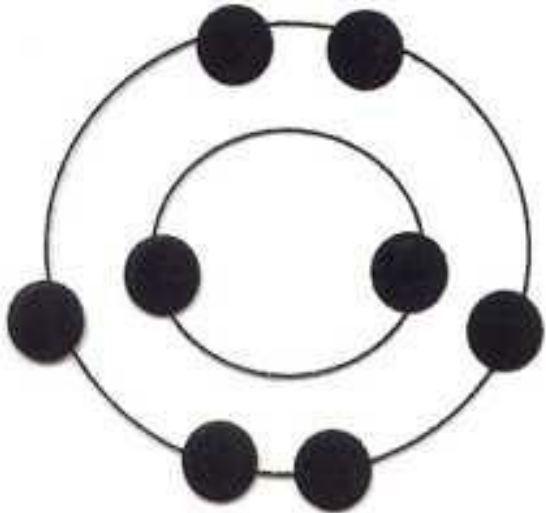
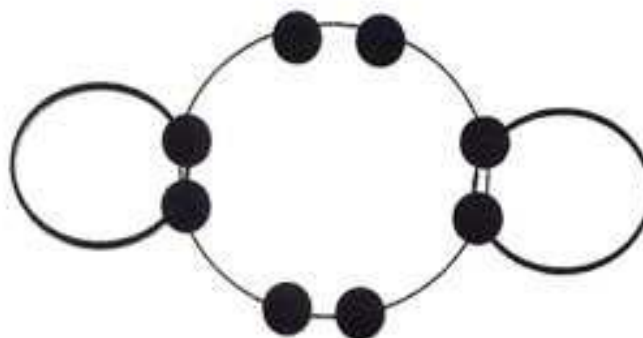


**LECTURE OUTLINE Chapter 4- Part 1: Covalent Bonds plus
Wilbur& Solar Power**

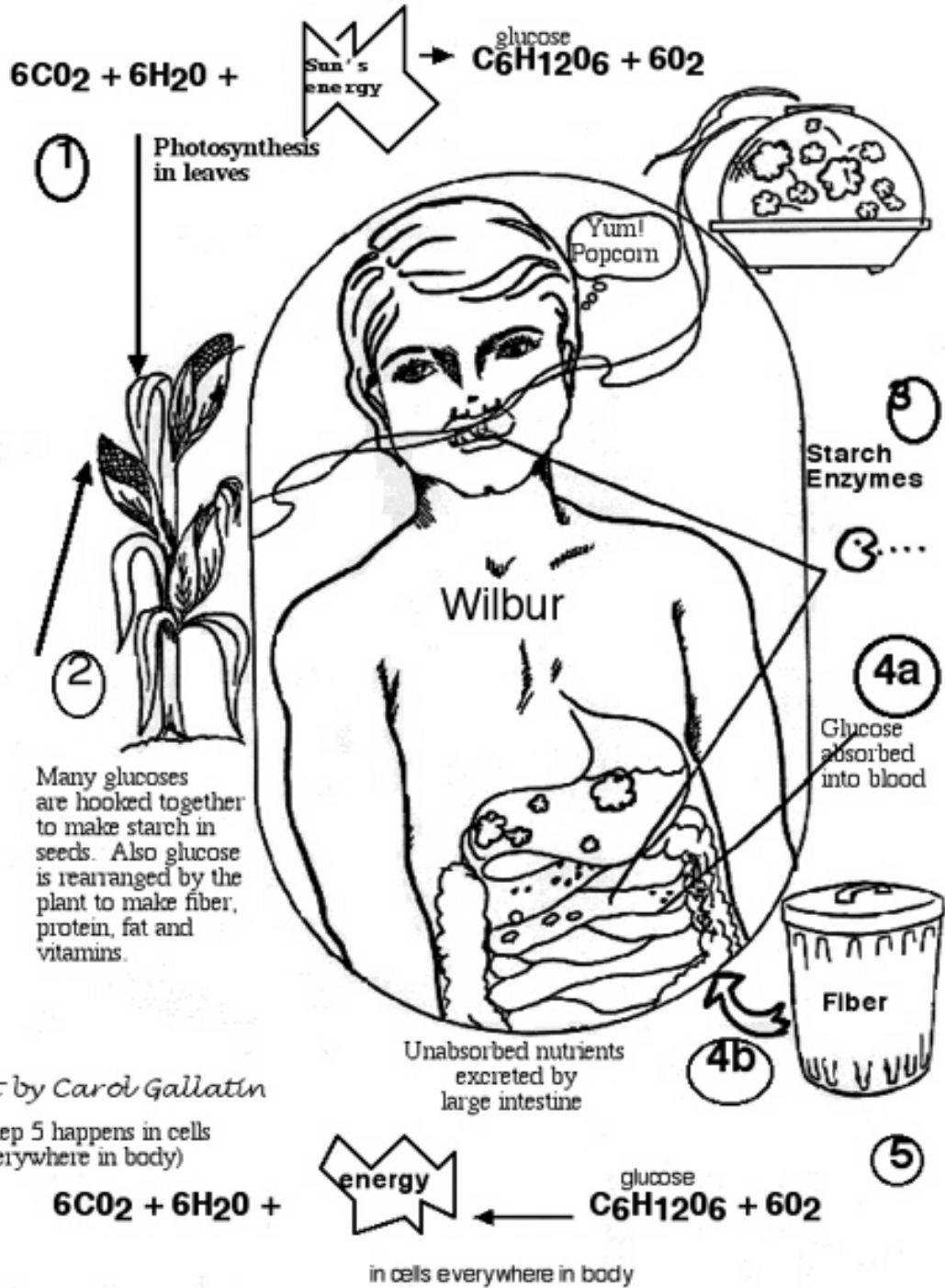
Go to our online Lecture 3A to fill in these blanks and to take other notes.

	<p>Directly on the left is an atom of hydrogen, which has only the first orbital shell. That shell is FULL when it has _____electrons.</p>
	<p>Directly on the left is an atom of oxygen, which has the first and the second orbital shell. That second shell is FULL when it has _____electrons.</p>



1. So what would this molecule be? _____
2. What is NOT shown in the oxygen part? The first shell of two electrons
3. Now, how many electrons does the hydrogen have in its outer shell? _____
4. Now, how many electrons does the oxygen have in its outer shell? _____

Wilbur Drawing: How Energy Goes from the Sun to Human Cells



**Your Notes about the Wilbur Drawing
From Watching Lecture 3B**

5 Steps of the Wilbur Drawing:

1. _____

2. _____

3. _____

4. _____

5. _____

Wilbur& Solar Power

Go to our online Lecture 3B and also look at the Wilbur drawing above to fill in these questions and to take other notes.

1. Why is glucose so important to the human body?

Can muscles use glucose? _____ Why is it less critical to the muscles?

2. What are the building blocks of glucose and **where do these come from?**

3. In what part of the plant is glucose made? _____

4. **Why** does the plant make glucose?

5. Glucose is so important in the Earth's food chain because it is then used **by the plant** to make:

- a. other carbohydrates, like _____ & _____ &

- b. _____ and
- c. _____ and
- d. _____

6. Corn has fat. The fat of the corn can be separated from the rest of corn & sold as _____ .

How did the corn get this fat? _____

Does corn have protein? _____ So, does corn oil have any protein?

7. When it's making glucose, where does the plant put the sun's energy?

8. When a **plant** needs energy to **grow**, how does it get it?

When a **seed** needs energy to **sprout**, how does it get it?

When a **human** needs energy to grow, how does it get it?

9. In what part of the plant is glucose stored as starch? _____
10. What is starch composed of? _____
11. What does the long chain of pop beads represent? _____
12. What does each pop bead represent? _____
13. What is the purpose of enzymatic digestion of starch?

14. What is the purpose of absorption of glucose into the bloodstream from the small intestine?

15. What is the **big picture** purpose of Step 5 of the Wilbur Drawing?

16. What happens in Step 5 to release the energy in glucose? *With the help of _____ and _____, glucose gets broken apart, releasing _____ as ATP and also producing _____ and _____.*
17. **Where** does Step 5 (of the Wilbur Drawing) happen?

18. Explain the relationship between photosynthesis **in plants** and what happens **in our body's cells** when energy is released from glucose.

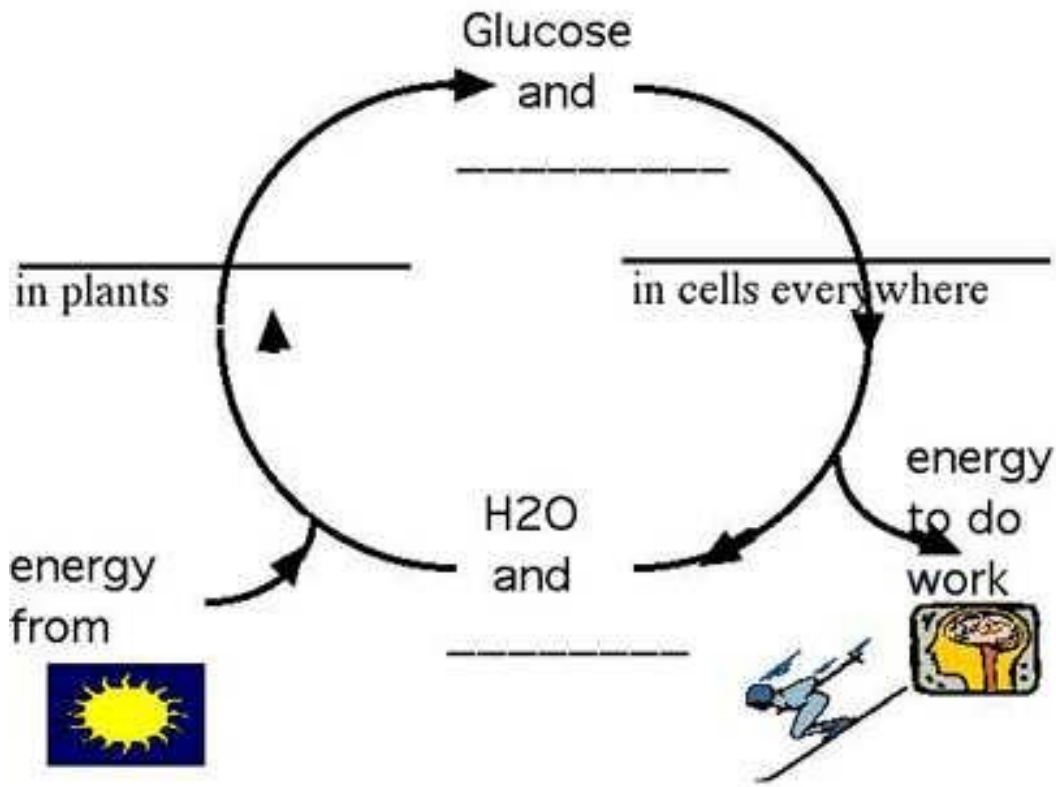
19. List 2 steps on the Wilbur page where oxygen is involved and EXPLAIN how oxygen is involved.

20. Can an animal photosynthesize glucose? _____

Then how do most animals get glucose? _____
21. Where is the fiber in your food excreted? _____

The following is described in the book *Photosynthesis* by Isaac Asimov, 1968 (on reserve at the LCC library..... a short & delightful book about how all of these discoveries were made several hundred years ago.)

Asimov's Great Cycle



When gasoline, coal and natural gas burn, what gas goes into the atmosphere?

Why is there more of this gas now? _____

This increased gas (a part of "greenhouse gases") can raise the earth's temperature because the gas can trap heat near the earth and keep it from rising up.