Part 1: Before you use the models

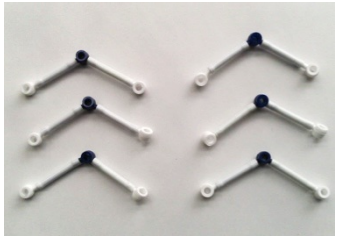
You will use models to learn about photosynthesis at the atomic-molecular scale, as you continue to look for answers to "unanswered questions" from your investigation.

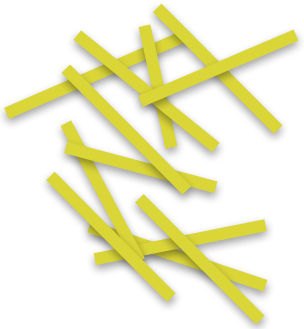
Introduction

- Plants photosynthesize when they are in the light. Light energy is changed into chemical energy, which is stored in the high-energy bonds of glucose: C-C and C-H bonds. Use the molecular models to show how this happens.

Part 2: Building the reactants

1. Use the bonds to make models of 6 carbon dioxide molecules (CO_2) and 6 water molecules (H_2O). You will need to use double bonds for your CO_2.
2. Place some twist ties next to the molecules. These represent light energy.
3. Compare your molecules to the pictures below. Are they the same?

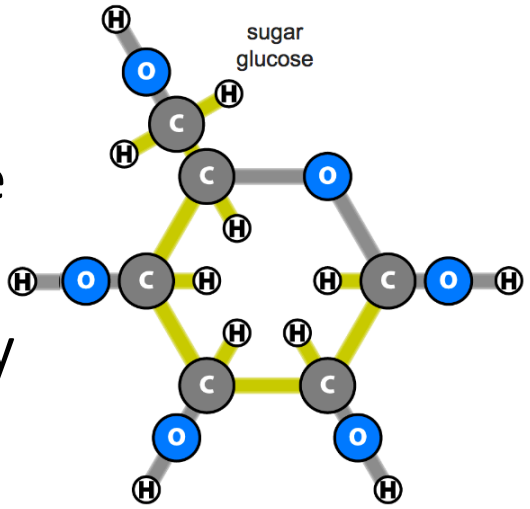


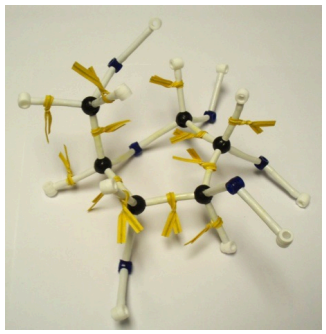


Answer Checkpoint 1 on your worksheet and check answers on wall

Part 3: Show the chemical change

1. Take the carbon dioxide and water molecules apart and recombine them into glucose ($C_6H_{12}O_2$) and oxygen (O_2) molecules. Put these molecules on the *product* side of your table.
2. Identify the **high-energy bonds** (C-C and C-H) by putting twist ties on them. How many high energy bonds does a molecule of sugar have?
3. Compare your molecules to the pictures below. Are they the same?





Answer Checkpoint 2 on your worksheet and check answers on wall

Part 4: Clean up and questions

1. Take apart your molecules – they should be completely separated! Put all atoms, bonds and twist ties back in your cup
2. Finish the questions on your worksheet.