Paper Model – Create a RoundUp Ready Soybean Plant

TEACHER INSTRUCTIONS:

Using herbicide resistance as the example, create a transgenic soybean *(Activity inspired by BioPharmaceutical Technology Center Institute, Madison WI)*

Prior to the lesson: Copy soybean sequence on green paper and bacterium sequence on salmon paper

Students may work individually or in teams.

1. Ask: What do we want to move where and why? Emphasize this point throughout the lesson.
2. Have students find **gene of interest** (on bacterium) . Then, have them use colored pencils and shade the gene sequence in red. Emphasize genotype v. phenotype.
3. Point out palindrome nature of recognition site. Have students use yellow highlighter or yellow colored pencils and find all restriction enzyme **recognition sites**. Students shade or highlight these recognition sites on both the soybean and bacterium strands of DNA.
4. On both the soybean gene sequence and the bacterium gene sequence, students use a pencil to draw a line indicating where restriction enzyme will cut the sequence.
5. Students cut genes apart on the line that was just drawn.
6. Have students lay cut outs on a sheet of plain white 8 ½ x 14 inch (legal size) paper. Begin to match **sticky ends** so that the herbicide resistant gene is now incorporated into the soybean's genome.
7. Finally, tape or glue cut outs down.
8. Using the listed terms, have students label the diagram and write a paragraph describing the process that the diagram represents.