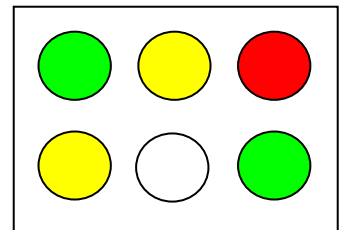


Appendix 2. Pre- and Posttest

1. What is a microarray?
2. Describe one use of a microarray.
3. Dr. Flora is studying the effects of high ozone levels on soybeans. She grew one group of soybeans in regular air and another group of soybeans in high ozone. She labeled the cDNA from high-ozone soybeans with red dye and cDNA from soybeans grown in normal air with blue dye. Here are the results that she obtained from an experiment using a soybean gene microarray:



Circle the dots for gene sequences that do not show a difference in gene expression in ozone vs. normal air. (Which sequences can Dr. Flora eliminate from further studies?) Explain WHY you chose these gene sequences.

Put the following microarray technology steps in order. Write the numbers below:

First _____ **Last**

1. Analyze results by comparing colors of the spots on the microarray.
2. Identify genes that are expressed or repressed by high ozone.

3. Isolate mRNA from soybeans grown in high ozone and normal air.
4. Spot soybean gene sequences onto a glass slide.
5. Create fluorescent-labeled cDNAs by reverse transcription.
6. Grow soybeans in high ozone and normal atmospheric conditions for 1 month.
7. Bind cDNAs to complementary gene sequences on glass slide.

Additional Questions only for Posttest:

What did you enjoy most about this microarray activity?

What did you enjoy the least about this activity?

Please share any suggestions for improvement of this learning activity.

Congratulations! You are one of the first high school classes to work on microarrays!

Thank you for your participation in this project.