

Student Questions

Before Activity

- 1) Do you know what mutations are? How could they be problematic for your body?
- 2) How similar or different are cancer cells to each other?
 - a. All cancer cells have the same mutations
 - b. Different types of cancers have different mutations, but all cancer cells of the same type have the same types of mutations
 - c. Different tumors, even tumors that come from the same tumor, might have different mutations, but within each tumor all the cells will have the same mutations
 - d. Within one tumor, there might be several different populations of cells, each with different combinations of mutations.

After Activity

- 1) Do you think your tumor is bigger or smaller than before?
- 2) Do you think the proportions of beads of each color changed?
- 3) What proportions of beads of each color did you expect?
- 4) Do you think the resistant cells helped the tumor grow?
- 5) Do you think the tumor with no resistance grew slower or faster?
- 6) Were there other factors that could've affected tumor size and growth?

After Analysis

- 1) Calculate the following:
 - a. Mean number of cells of each type within a repeated group
 - b. Mean number of cells of each type across different groups
 - c. Mean number of all resistant "cells" vs all "non-resistant" cells
- 2) Do you think the resistant cells help the tumor grow? Why?
- 3) Did the tumor with no resistant cells grow slower or faster? Why?
- 4) Were there significant differences between the growth of resistant cell populations and non-resistant cell populations?
- 5) How did the original growth rate of cells affect the final tumor composition?
- 6) What other factors could have affected tumor size and growth?
- 7) How did your group's tumor compare to other groups' tumors?