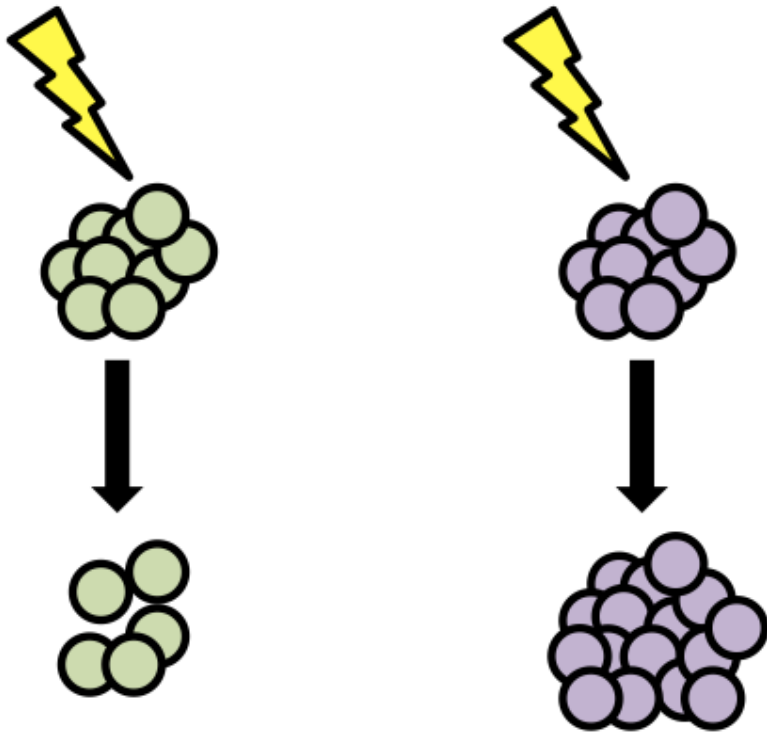


Tumor Heterogeneity and Chemotherapy Resistance: The Fault in Our Cells

Koch Institute for Integrative Cancer Research
MIT

Do you think all of the
cancer cells in a tumor
have the same
mutations?

Chemotherapy Resistance

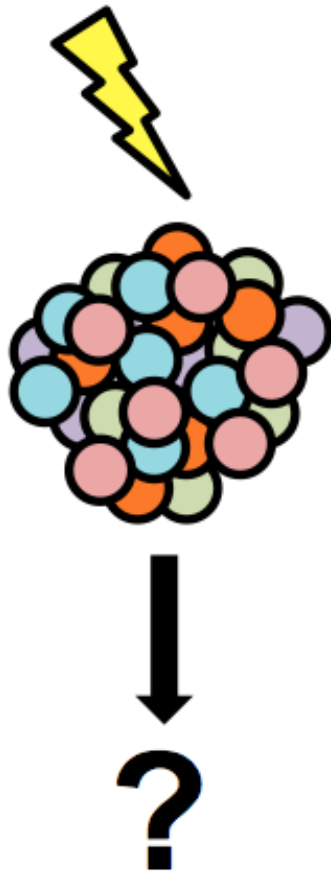


Sensitive to
therapy

Resistant to
therapy

Different tumor cells
will respond to
chemotherapy in
different ways

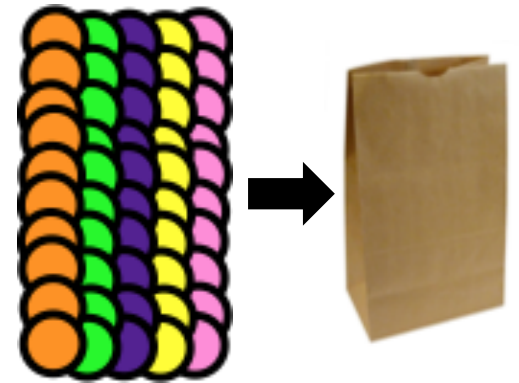
Chemotherapy Resistance



- Different tumor cells will respond to chemotherapy in different ways
- Tumors have cells with many different mutations
- How does this affect the tumor's response to therapy?

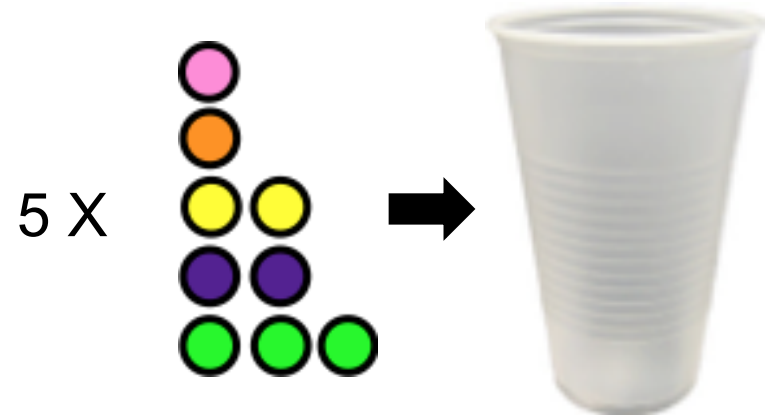
Simulation Rules

1. Put 10 of each color bead in your bag.
This is your tumor.



2. In each of 5 cups, put:

Pink	1 bead
Orange	1 bead
Yellow	2 beads
Purple	2 beads
Green	3 beads



This represents division of the cancer cells

Simulation Rules

- Person 1 = **Chemotherapy**: kill cells by taking them out of the bag one-by-one
- Person 2 = **Cancer cell division**: Every 30 seconds, add one cup of cells
- Person 3 = **Chemo resistance**: When 3 of your resistant cells have been killed, put 2 back in the bag
- Look at your instructions to see which cells are resistant for your group



Simulation Results

