Exploring Cancer – Worksheet

Station #1: HeLa cell division
Watch the video of dividing HeLa cells. A red arrow will appear just before a cell divides.
http://www.youtube.com/watch?v=8nlfP03bdxo&feature=youtu.be

1) What are some observations you make about the dividing cells? Try and see metaphase/anaphase occur.

2) Pay particular attention to the divisions in lower right-hand corner of the video. Do you notice anything irregular?

3) Brainstorm the specific steps of cell division that could go wrong to cause this irregularity.

4) What mechanisms does a normal cell have in place to prevent this irregularity?

5) What might the karyotypes of the cells resulting from irregular cell division look like?
Station #2: Examining Cancer Karyotypes

1) Look at the karyotype for Case A. This is a normal karyotype. What observations can you make? Is this person male or female?

2) Look at the karyotype for Case B.
   a. What differences do you see between this and normal?

   b. If a normal cell ended up having this karyotype, what would happen to it next time it tried to undergo cell division?

   c. What processes would a cancer cell with this karyotype be evading?

3) Look at the karyotype for Case C. What differences do you see between this and normal? The differences here are more subtle. Can you guess what type of cancer this patient may have?
Station #3: Normal vs. Cancerous Cell Growth
Watch the animation comparing normal cell growth to cancer cell growth. http://www.youtube.com/watch?v=IeUANxFVXKc

1) What do you observe about the way normal cells grow?

2) What do you observe about the way cancer cells grow?

3) What is different between the two types of cell growth?

4) What are some normal growth control processes that might not be present in cancer cells?
**Station #4: Comparing Blood Smears: CML**

At this station, there is a set of blood smears, one from normal blood and one from blood of a patient with chronic myeloid leukemia (CML). Examine each smear and note the similarities and differences between them.

**Chronic Myeloid Leukemia (blood)**

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