**Mitosis homework questions**

Name and date submitted (3 pts):

(100 points possible, as marked below)

Using this handout as a TEMPLATE, create space in between questions below and write or type your answers. KEEP THE SAME NUMBERING! Resources: you can use your textbook, the Internet, and the videos and PPT slides on the class page for resource material.

1. (20 pts) The Cell Cycle
   1. Sketch the cell cycle. Show and label the G1, S, G2 and Mitotic phases. Take pride in your artwork!
2. (15 pts) Interphase
   1. Describe what happens in the G1 phase.
   2. Describe what happens in the S phase.
   3. Describe what happens in the G2 phase.
3. (20 pts) Mitosis

Mitosis consists of prophase, metaphase, anaphase, and telophase. Together with “interphase” (G1, S, and G2) it forms the mnemonic “I Played My Accordion Today”.

* 1. Explain what happens during Prophase
  2. Explain what happens during Metaphase (lump together “prometaphase” here)
  3. Explain what happens during Anaphase
  4. Explain what happens during Telophase

1. (5 pts) Cytokinesis
   1. Explain what happens during Cytokinesis
2. (10 pts) G0 Phase
   1. What is the G0 phase?
   2. Two types of cells that remain in the G0 phase are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. (20 pts) Checkpoints
   1. Show the G1, G2, and M checkpoints on your sketch in #3.
   2. Explain the function of the G1 checkpoint.
   3. Explain the function of the G2 checkpoint.
   4. Explain the function of the M checkpoint.
4. (10 pts) Cancer: uncontrolled cell division

Cancer is actually 200 separate diseases, each with its own cause and treatment. We now believe that pancreatic cancer consists of 4 separate diseases, for example.

* 1. If I tell you that a cancerous tumor is caused by uncontrolled cell division, what can you infer about the tumor cell’s “checkpoints”?
  2. A checkpoint regulator, the “p53” protein, can become damaged and allow tumors to grow. The gene which encodes for the p53 protein is located on chromosome 17.

In Homo sapiens (you and me) this gene is known as NC\_000017.11. Go to the NCBI GenBank page here…. <https://www.ncbi.nlm.nih.gov/nuccore/NC_000017.11?report=genbank&from=7668402&to=7687550> and tell me how many base pairs this gene has on chromosome 17?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ bp.

You will need to scroll all the way to the bottom of the page. All the base pairs (all the A’s, T’s, C’s, and G’s) are numbered to make your job easier.