Cell Cycle Unit Objectives

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| **Quiz 2:*** Cell Size and Differentiation:
1. What is a stem cell?
2. What is the difference between a stem cell and a differentiated cell?
3. Why does differentiation occur as a multicellular organism develops?
4. What is an organism’s genome?
5. Explain the effect of cell growth on SA:V:
	1. As a (cuboid, spherical) cell grows – which grows faster SA or V?
	2. Why is more SA “good” for a cell’s functioning?
	3. Why is more V “bad” for a cell’s functioning?
6. If a “too big” cell doesn’t divide, what happens?
* Chromosomes:
1. Haploid number (1n)
2. Diploid number (2n)
3. Somatic cell
4. Gamete
5. Chromosome (before copied, after copied)
6. Gene
7. Is an organism’s complexity solely a result of the number of chromosomes it has? Can you say that there is a direct relationship between chromosome # and complexity?
8. What is a karyotype? What information can it provide? When is it used?
9. What is the difference between biological genders in terms of chromosomes? How can a karyotype tell you gender information?

**Quiz 3*** Cell Cycle:
1. Name the process by which prokaryotes asexually reproduce/divide
2. What happens during each of the 3 main phases of the eukaryotic cell cycle?
	1. Interphase
	2. M phase
	3. Cytokinesis
 | 1. What happens during each of the 3 defined phases of interphase?
	1. G1
	2. S
	3. G2
2. Which phase of the eukaryotic cell cycle is when the cell is just *livin’* its life?
3. In which phase of interphase is the DNA of the cell doubled to prepare for cell division?
4. What type of cells are formed by the “mitosis version” of M phase and the “meiosis version” of M phase? What is the basic difference between the two versions?
* Mitosis:
1. Name the 4 basic phases of mitosis in the order in which they occur.
	1. In which phase do the chromosomes line up in the middle of the cell?
	2. In which phase does chromatin coil up to form structures called chromosomes?
	3. In which phase are the sister chromatids of each chromosome separated from each other and pulled towards opposite ends of the cell by the spindle fibers?
	4. When do new nuclear membranes (“envelopes”) form around the chromosomes at each end of the cell to form the new nuclei?
2. How is cytokinesis different in plant and animal cells?
* Cancer:
1. What is apoptosis?
2. How are cancer cells different from regular cells?
* Meiosis:
	1. What is the difference between Mitosis and Meiosis?
	2. How does meiosis promote variation in the species?
	3. What is synapsis?
	4. What is crossing over?
	5. What is independent assortment?

**Quiz 4*** Cloning:
1. Contrast the three basic types of cloning.
2. What is embryo splitting?
3. What is nuclear transfer?
4. What is gene transfer?
5. What is a stem cell? Why are they so special?
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