Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Period:\_\_\_\_\_\_\_\_\_\_\_\_\_Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Cell Cycle Drawing**

**Why do cells reproduce?**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ doesn’t

work well on a cell that is too big.

* Larger cells place too much demand on the genetic info (\_\_\_\_\_\_\_\_\_)
* To \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_





**Control of the Cell Cycle**

Cell cycle has key checkpoints to trigger or delay the next phase. The goal of the checkpoints is to make sure the cell is healthy, strong and completing each step correctly. DNA controls these checkpoints. A mutation in the DNA that controls the cell cycle leads to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Ultimately the cell cycle continues even when it does not need to and cells keep dividing producing a mass of cells called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

* What are the 3 main steps of the cell cycle?
* What is the longest phase of the cell cycle?
* What 2 main things happen during this phase?
* After DNA copies what does it look like?
* What steps involve the nucleus dividing?
* What step involves the cytoplasm dividing?

**Bacteria Cell Division**

**Do bacteria undergo mitosis? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**So they copy their DNA and split in two. This is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |  |  |
| --- | --- | --- |
|  | **Mitosis** | **Meiosis** |
| Goal | The goal of mitosis is to create \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cells with the \_\_\_\_\_\_\_\_\_\_ number of chromosomes to help with growth and healing. | * The goal of meiosis is to create the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cells with \_\_\_\_\_\_\_\_\_\_\_\_ the number of chromosomes.
 |
| Picture |  |  |

**Chromatin, chromosomes, chromatids, oh my!**

 ****

Loose uncoiled DNA uncopied copied chromosome

during Interphase chromosome each half is a chromatid

Why does DNA form a chromosome before mitosis? Remember the yarn demo….

How does each half of the X compare? Are the sister chromatids identical or different from one another?

**Cell Differentiation**

You start out as one cell. Before that cell divides by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_it makes an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ copy of DNA. During \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, only specific parts of the DNA are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_; and this determines the type of cell. Once a cell differentiates, this cannot be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

How does meiosis and sexual reproduction give more diversity???

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of an egg and sperm.
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (random organization of chromosome pairs at the equator).
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_ occurs during meiosis I in which homologous chromosomes exchange pieces of chromosomes.

**Cell Cycle Questions**

* What is the longest phase of the cell cycle? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* What 2 main things happen during this phase?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* What steps involve the nucleus dividing?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* What step involves the cytoplasm dividing? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



**Haploid vs. Diploid Cells:**

Meiosis makes the sex cells which are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (have half number of chromosomes.

During \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the egg and sperm join to form a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cell with both chromosomes again.

How many pairs of chromosomes does a human have? \_\_\_\_\_\_\_\_\_\_





**Karyotype 2:**

* Is this person male or female? How do you know?
* Circle the mistake in the karyotype. This is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* This is the result of a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. This occurs when the chromosomes don’t separate during meiosis so one parent gives 2 chromosomes instead of just 1. This is also called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Karyotype 1 – Normal**

* Humans have \_\_\_\_\_\_\_\_ total chromosomes. \_\_\_\_\_ come from mom and the other \_\_\_\_\_\_ come from dad.
* Paired chromosomes are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ chromosomes since they are similar to one another. Two #1’s are homologous. #1 is non-homologous to number 6.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - 1st 22 pairs of chromosomes (44 total)
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - 23rd pair (2 total) determines your \_\_\_\_\_\_\_

Female (2 big) \_\_\_\_\_\_\_\_\_ Male (big and little) \_\_\_\_\_\_\_\_

**Chromosomal Mutations**

  

piece of a chromosome breaks off crossing over between homologous chromo. doesn’t happen evenly

 

Genes on chromosome are flip flopped chromosome piece attaches itself to a nonhomologous chromosome