**DNA and Mitosis Webquest** Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ hr\_\_

Find this worksheet on Canvas for quick links.

**All Wound Up:** Click on this link: <http://www.pbs.org/wgbh/aso/tryit/dna/woundup.html>

1. Which macromolecule is found as a single strand in a chromosome? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. In a chromosome, what protein is DNA wrapped around? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. If a fruit fly’s DNA was stretched out, how much longer would the DNA from one cell be in comparison to the length of its body? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. How many chromosomes are found in each cell of the fruit fly? \_\_\_\_\_\_

**DNA Molecule “How DNA is Packaged**”: Click on <https://www.dnalc.org/resources/3d/07-how-dna-is-packaged-basic.html> Watch the short video.

1. How many feet of DNA fit in every cell? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What do we call the form/shape of DNA that is wrapped around histones to become nucleosomes, which is packaged into a thread called chromatin, which is coiled into a solenoid, which is looped and coiled again into a familiar X shape (the condensed, visible form of DNA)? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. When are chromosomes visible in the cell? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Bioman** –(Genetics) - Mitosis Mover

Click on <https://www.biomanbio.com/HTML5GamesandLabs/Genegames/mitosismoverpage.html>

Click on “Start a New Game!” and follow directions.

1. During the cell cycle, one cell divides to form \_\_\_\_ daughter cells with exactly the same \_\_\_\_\_.
2. What does the cell do during interphase?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Uncoiled stringy DNA is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Which of the following are true statements?
	1. DNA replicates during Interphase. c. Genes are found on DNA
	2. Chromatin is made of DNA. d. All of the above
5. Why do organisms do mitosis? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. What is the correct order of the 4 steps in mitosis?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. One important event of Prophase is that the chromosomes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and become visible. This means that the chromatin gets packaged up so that it is easier to \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_
2. Each half of a chromosome is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_.
3. The nucleus \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ during prophase.
4. What happens during metaphase? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. What happens in anaphase?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. What happens in telophase? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. What happens in cytokinesis? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. After mitosis and cytokinesis are complete, \_\_\_ genetically \_\_\_\_\_\_\_\_\_\_ daughter cell have been produced.
3. Draw each step of mitosis and cytokinesis in the correct order:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Order: | 1st | 2nd` | 3rd | 4th | 5th |
| Picture: |  |  |  |  |  |
| Phase: | **Prophase** |  |  |  |  |

**Cells Alive**-**Mitosis**  Click on this link: <https://www.cellsalive.com/mitosis.htm>

1. Use the text under “**Events during Mitosis**” to answer the following.
	1. We do not focus on prometaphase in class, which is sometimes included as a step of mitosis. This stage occurs between \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
	2. What occurs during prometaphase? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Write the name of the **stage** after the description?
	1. \_\_\_\_Chromatin condenses into chromosomes: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	2. \_\_\_\_Chromosomes align in the center of the cell: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	3. \_\_\_\_Longest part of the cell cycle: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	4. \_\_\_\_Nuclear envelope breaks down: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	5. \_\_\_\_Cell is cleaved into two daughter cells: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	6. \_\_\_\_Daughter chromosomes arrive at poles: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	7. \_\_\_\_Spindle fibers shorten and chromatids are pulled apart: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. In the area before each description above (#9, a-g) write the numerical order of the steps.
3. Click “**Start the Animation**” and watch the video carefully. You can slow down the video by clicking step by step through the phases. The colored chromosomes represent chromatids. There are two of each color because one is an exact duplicate of the other.
	1. How many chromosomes are visible at the beginning of mitosis? \_\_\_\_\_
	2. How many chromosomes are in each daughter cell at the end of mitosis?\_\_\_\_\_
	3. The little green T shaped things on the cell are centrioles. What are the centrioles attached to? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Online Onion Root Tips**: Click on <http://www.biology.arizona.edu/cell_bio/activities/cell_cycle/cell_cycle.html>

1. Read the introduction. What type of cells are examined on this website? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Click “Next” at the bottom of the page. Follow the directions on the website.

1. Identifying Cell Cycle Stages: Draw the picture of each stage and give a brief description of each.

|  |  |
| --- | --- |
| Phase picture: | Description |
| Interphase |  |
| Prophase |  |
| Metaphase |  |
| Anaphase |  |
| Telophase |  |

1. Click “Next.” You will have 36 cells to classify. Follow the given directions on the website. When your are finished, record your data in the chart below.

(To calculate %: **number of cells in each phase** divided by **total number of cells** x 100)

**Mitosis: A Stage of the Cell Cycle—Picture Perfect**

Click on [**https://www.quia.com/servlets/quia.activities.common.ActivityPlayer?AP\_rand=1538401416&AP\_activityType=12&AP\_urlId=3371&AP\_conti**](https://www.quia.com/servlets/quia.activities.common.ActivityPlayer?AP_rand=1538401416&AP_activityType=12&AP_urlId=3371&AP_conti)

Read the instructions on the website and click “Play this game!”

When you have successfully completed the activity, you will see” You Win” and you can see the hidden picture.

What is the correct order of mitosis?

1.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 2.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 3.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 5.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 6. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What is the picture?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Rags to Riches game**: Click on <https://www.quia.com/rr/89527.html>

Play the Rags to Riches game by answering the questions to gain $$$$!

You have 3 hints to help you.

Be careful—if you answer incorrectly, you will have to start over!

To begin, Play the Adobe flash player or click “Play HTML version.” You must make at least **$16,000**.

Write how much money you made here:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Quizlet: Mitosis**

Click on <https://quizlet.com/263842250/mitosis-flash-cards/>

Practice your vocabulary terms. Play a game.