As eukaryotic cells grow and divide, they move through three (3) distinct stages, known as the **cell cycle.**

**Manager: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Recorder: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Speaker: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**0 1 2 3 4 5**

**Cell division is important** for **reproduction**, **growth** and **repair.**

**Mitosis** is the division of the nucleus into two identical nuclei. **Mitosis** has four phases: prophase, metaphase, anaphase and telophase.

As a group you will be constructing an animated sequence to demonstrate the process of **mitosis**.

This worksheet will allow your group to PREPARE and PLAN your finished product, while learning about **the cell cycle** and **mitosis.**

**PRE-LAB ACTIVITY:**  **TO BE COMPLETED INDIVIDUALLY IN YOUR NOTEBOOKS**

1. **Refer to Sect. 2.3** (Importance of Cell Division) – Pg. 36 to 37. **READ** this section individually. **Summarize the key information** from this section. **Use a form of summarization** of you choosing (i.e. flow chart, mind-map, comparison chart, etc.).
2. **Refer to Sect. 2.5 (The Cell Cycle) – Pg. 40 to 44.** Copy Figure 1 (pg. 40) into your notes. Use the questions below to guide you through your note taking process for this section.

* What are the three (3) major stages in the Cell Cycle?
* What key events occur during **interphase?**
* What are the two (2) major stages in cell division?
* What are the four (4) phases of **mitosis?** What key events occur during **each phase of mitosis?** Are there visible characteristics of a cell that allow each phase to be identified under a microscope or with imaging technology? If so, what are they (what do they look like?) What key **cell organelles** play an important role during each phases, **describe their roles.**
* How do **chromosomes** **move** during mitosis?
* What is the **final stage** of cell division? How is this stage **similar** and how does thisstage **differ** in animal and plant cells?
* **Does a cell always move from interphase to cell division?** Discuss this question andrecord your findings.

**DUE: Wednesday November 2, 2011**

**CONSTRUCTING the Cell Cycle in *Claymation:***

**Manager: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Recorder: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Speaker: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**0 1 2 3 4 5**

The **final Claymation product** will be **evaluated (numerical grade)** according to the attachedrubric.

1. Ensure **all group members** understand the rubric attached and expectations of the assignment
2. While you will be **creating one (1) group product** you will be **graded individually on your contribution to the final product**
3. **Ensure each member is accountable and does their part!**

The class will be using play dough to create a model of a plant or animal during the next two class days. You will be assigned a cell type for your claymation.

Each group will create a ‘claymation’ of the process of **the cell cycle** by moving the play dough model slightly with each **digital picture taken**. The goal is to create an animation of the process of **the cell cycle**. Your animation must show all the stages in sequence with seamless transitions between the stages.

**Background Information:**

*Claymation* is the generalized term for *clay animation*, a form of stop [animation](http://www.wisegeek.com/what-is-animation.htm) using clay. The term *claymation* was coined by its creator, Will Vinton, owner of an animation studio that worked with clay artists to create clay animation. Claymation involves using objects or characters sculpted from clay or other moldable material, and then taking a series of still pictures that are replayed in rapid succession to create the illusion of movement. Some of the more famous claymation characters in history include Gumby and Pokey, Wallace and Gromit, and the California Raisins. In a claymation production, artists sculpt the characters out of clay and often support the sculpture with wire molds underneath. To create the illusion of movement, the position of the sculpted characters is altered slightly in every still photo, or *frame*. Just like other forms of animation, claymation generally requires a storyboard or background for the characters to be set against and to develop what they will do or say. Depending on the length of production, the same character may need to be sculpted hundreds of times. (J. Beam – wiseGEEK, 2011)

**As a group, PLAN your ‘Cell Cycle’ Claymation.** The **following ‘task prompts’** may help you to prepare and organize, so that your group is ready to build and film tomorrow.

**Assign roles** within your group **to split up work in an equitable fashion**

* + who will be responsible for which stage and phase?
  + who will be responsible for the construction of the cell model?
  + who will be responsible for the movement between each frame?
  + who will be responsible for taking the digital pictures. The camera must be placed so that it is not moved between pictures. Decide where you will place the camera and do not move it during your picture taking process.
  + who will be responsible for the **text and explanation** to clarify events during

each stage and phase?

* Create a **storyboard** for your animation (what will each digital frame look like?)
* What materials **other than playdough** (provided by teacher) will your group need
* How will the **explanation of the cell cycle** be done in your animation? (refer to rubric)

You will be using **Movie Maker** to complete your claymation. You will be required to take all your images and import it into Movie Maker and create your animation. You must add a title page and a credits page to your animation. You may also add appropriate music to your animation if you wish. You must save your “movie” into “.wmv” format so that it will play.

**Attach your PLANNING (storyboard, script/direction, roles)** to this rubric for submission.

**Names:**

**MARKING SCHEME:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Criteria** | **Level 1**  **1 2 3 4 5** | **Level 2**  **6 7 8 9 10** | **Level 3**  **11 12 13 14** | **Level 4**  **15 16 17 18** | **Grade** |
| **Quality of Construction** | The model was put together with very little skill.  Items appear to be unorganized. | The model shows some attention to construction.  Most items are neatly displayed and organized. | The model shows attention to construction.  The items are neatly organized. | The model shows considerable attentions to construction.  All components are neatly organized.  Attention was given to detail; each component was accurately modeled. | **/20** |
| **Animation** | The animation was not complete.  It didn’t clearly show all stages and phases of the cell cycle in a continuous fashion. | The animation was complete.  Some stages and phases of the cell cycle were inaccurate. | The animation was complete.  The animation presented minor issues transitions. | The animation was complete.  All transitions between stages and/or phases were smooth. | **/20** |
| **Explanation of Mitosis** | Titles and text were not included to clarify each stage and/or phase. | Titles and text were included but were not accurately labeled. | Titles and text were included with minimal errors. | Titles and text were clear and accurately explained the cell cycle. | **/20** |
| **Individual work ethic.** | Work reflects very little effort from this student.  Individual was unprepared and rarely contributed to group organization and the final product. | Work reflects some effort from this student.  Individual often needed reminders to stay on task and contribute to their group.  Other group members provided main support in order to finish the final product. | Work reflects a strong effort from this student.  Individual contributed to the group with minimal reminders to stay on task. | Work reflects this student’s best performance.  Individual played a key role in group organization and a successful final product. | **/ 20** |

**Total = /80 converted to / 25**