**Unit 4: Cell Function  
Review Stations**

Station 1: Cell specialization/Differentiation  
Watch the video at

[https://unctv.pbslearningmedia.org/resource/tdc02.sci.life.stru.different/cell-differentiation/#.WNJsymu7rIV](https://unctv.pbslearningmedia.org/resource/tdc02.sci.life.stru.different/cell-differentiation/" \l ".WNJsymu7rIV) and answer the following:

* How would you explain the similarities in the embryos of birds, mammals, and reptiles at early stages of development?
* What directs the sequence of events that turn a blob of cells into an embryo with specialized tissues and organs?
* How do cells in different parts of the embryo become different kinds of cells and organs?
* What role does DNA play in the development of the embryo?
* What is cell differentiation and what does it have to do with specialized cells?

Station 2: Cell Cycle   
Using your device, open up the following site: <http://www.cellsalive.com/cell_cycle_js.htm>. Then click the button that says “Start the Animation.” You’ll start with Interphase. Hit Play and watch the animation.

1. What are the parts of interphase? What are the major events in each?
2. What part of the cell cycle follows the G2? Is it part of interphase?
3. What is the purpose of checkpoints in the cell cycle? (Hint: Think about what controls the rate of the cell cycle)
4. How might cancer relate to a problem with the checkpoints in the cell cycle?
5. Besides the checkpoints, what else controls how quickly cells divide?

Next, Look at the diagram Labeled “Model 1.” Use the diagram to answer the following:

1. Where is mitosis in the cell cycle? Before \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and after \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. List the phases in mitosis. There are 4 (the abbreviation is fine as an answer).
   1. What is actually divided in mitosis?
   2. During which phase do the spindle fibers attach to the chromosomes?
   3. During which phase(s) do cells have nuclear membrane(s)?
   4. Why does the nucleus have to disintegrate?
3. How many cells at each of the following points of the cell cycle?
   1. The G1?
   2. The end of G2?
   3. The middle of the S phase?
   4. The beginning of the “M” or Mitosis phase?
   5. The end of the “M or Mitosis phase?
4. What shape do the replicated chromosomes look like in prophase? How many chromatids are in each replicated chromosome? Why is it called a “replicated” chromosome?

Next, find the “Read This!” on your sheet. Answer the following:

1. Does this information change what you wrote in answer #4 above? Explain.
2. What would an unreplicated chromosome look like? During which phase(s) of mitosis would you see unreplicated chromosomes?

Staion 3: Cell Energy  
Complete the Photosynthesis and Respiration Graphic Organizers and Card Sort Activity

Station 4: Throwback-Cell Transport  
Use the chart below for reference as you complete the Homeostasis and Cell Membrane Graphic Organizer.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Type of Transport** | **Subtypes of That Transport** | **What Gets In?** | **What Cell Parts are Used for Transport?** | **How Works** |
| Osmosis | None | Water | Plasma Membrane | Water sneaks past shifting phospholipids |
| Passive Trasnport | Diffusion | Small Ions/molecules (ex: CO2, H20) | Plasma Membrane | Particles sneak past shifting phospholipids |
|  | Facilitated Diffusion | Solutes | Either Protein Channels or Carrier Proteins | Particles move with a concentration gradient through proteins |
| Active Transport | Regular | Solutes | Protein Pumps | Particles pumped against a concentration gradient with Protein Pump |
|  | Endocytosis | Food particles larger than solutes | Vessicles and Plasma Membrane | Plasma Membrane surrounds food and pinches it off into a vesicle inside the cell |
|  | Exocytosis | Cell Wastes | Vessicles and Plasma Membrane | Vessicle containing waste fuses with plasma membrane and is dumped |