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**Lab: Human Cheek Cell**

*Purpose:*

To use a compound microscope to make observations about the animal cells inside of our cheeks in order to become familiar with the structure and function of animal cells.

*Background:*

Cells are the basic building block of all living things. Cells are very small and can be seen clearly using a microscope. All organisms in the Plant, Animal, Protista and Fungi have ***similar*** cells. These cells are eukaryotic meaning they all contain a nucleus. A nucleus is the command center of a cell and also contains genetic information (a blueprint of the cell).

1. What are the two different types of cells?

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1. What kingdom do humans belong to?

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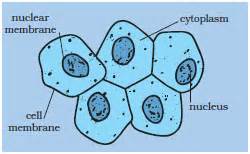
1. What type of cell does that mean we have?

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1. What is a microscope used for?

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*Animal cells:*

Today we will be looking specifically at our own cheek cells (*epithelia cells*) which are a type of animal cells. Epithelial cells help to protect or enclose organs. Epithelial cells are the safety shields of the body. Most produce mucus or other secretions. Animal cells have various organelles but the ones we will be able to observe in the lab are the ***nucleus, nuclear membrane, cytoplasm and cell membrane.*** *The nucleus directs the cells activities. The nuclear membrane* decides what goes into and out of the nucleus – DNA is too large but RNA is small enough to leave. The cytoplasm supports and protects cell’s organelles. Contains some nutrients for cell. The cell membrane determines what goes in/out of cell. Protects and supports cell

1. What are epithelia cells?

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What is the **function** of each cell organelle:

1. Nucleus\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Nuclear membrane\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Cytoplasm\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Cell membrane\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*What if an animal cell was missing organelles?*

Without a ***Nucleus****,* a cell could not function as no direction for organelles will be provided. Without a ***nuclear membrane*** DNA and nucleolus would not be protected and would be free floating in the cytoplasm. Without ***cytoplasm*** organelles would have no protection or support and nutrients could not diffuse through cell. Without a cell membrane, materials could go in and out unfiltered. Also, the cell would lack structure.

What would occur without each organelle:

1. Nucleus\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Nuclear membrane\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Cytoplasm\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Cell membrane\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Staining a Cell:*

Since cells are mostly transparent, or clear, it is necessary to stain them a certain color in order to see them under a microscope. In order to see the nucleus of a cell during today’s lab we will be using a stain so that it shows up under a microscope **METHYLENE BLUE STAIN**.

1. Why do we use methylene blue stain when observing cheek cells (epithelial cells)?

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**Procedure:**

Directions: Check off each step as you complete it.

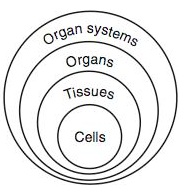
**AS A CLASS**

* 1. Place a drop of water on a clean slide.
* 2. Gently scrape the inside of your cheek with the flat side of a toothpick. Mix cells with the drop of water on the slide. THROW AWAY TOOTHPICK IMMEDIATELY.
* 3. Put one drop of stain on a slide. Caution: This stain will stain clothes and skin.
* 4. Place a coverslip onto the slide and place on microscope stage.
* 5. Make sure to start on LOW POWER. Cells should be visible, but they will be small and look like nearly clear purplish blobs. If you are looking at something dark purple, it is probably not a cell.
* 6. Once you think you have located a cell, switch to MEDIUM POWER and refocus if needed.
* 7. You may try to view cells on the High Power (Blue Stripe). But you may not be able to see any clearly. Indicate which power you are viewing and draw what you see in the circle below marked Medium Power.
* 8. Make sure to label the
  + **Nucleus**
  + **Nuclear membrane**
  + **Cytoplasm**
  + **Cell membrane**

|  |  |
| --- | --- |
| Total Magnification  *(Ocular lens x Objective)* | CHEEK CELL  Observations |
|  | /Users/emilyumile/Desktop/download-1.png |



1. Indicate which level you have observed today in the ***Levels of Organization*** circle below.



1. Complete the ***Levels of Organization Triangle*** Below using the terms listed below. **ORGANISM, TISSUE, CELL, ORGANELLE, ORGAN, ORGAN SYSTEM**
2. On both diagrams LABEL which level is the most COMPLEX level.