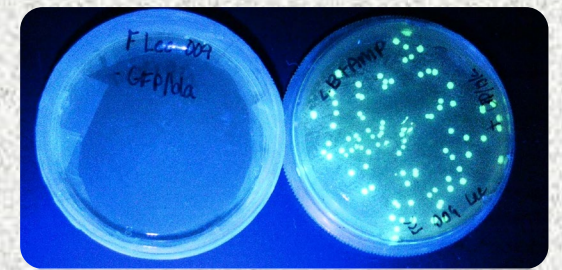
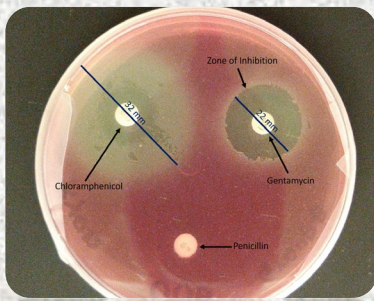


The Document Camera: A COVID Superhero

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Department of Biology



The Suspect

BIOL 103 and 104 General Biology laboratories were charged with the task to create COVID makeup assignments shortly after the start of the Fall 2021 semester amidst the chaos of quarantines, vaccine boosters, and returning to campus.

The Victim

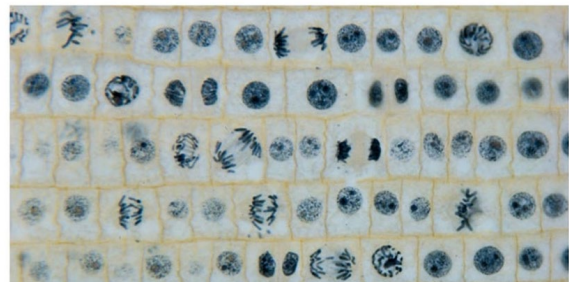
Already burdened with 48 sections of lab and 12 untrained graduate teaching assistants from non-STEM fields, I worked nights for two weeks to create 28 makeup laboratory assignments.

Our Superhero

The versatility of the document camera effortlessly captured photos and videos of our experimental setups allowing students to visualize the activities and independently collect data for analysis. Microscope slides and organisms were captured with high resolution for clear viewing and interpretation.

Directions:

Pictured below is your view of an onion root tip with the 40x objective lens. Use this picture to complete your drawings and answer the questions in your lab manual.

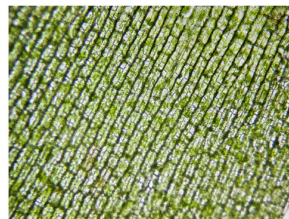


Directions:

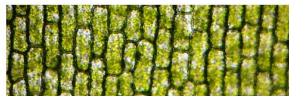
Part 1: Focusing on Plant Cells (Eukaryotic Cells)

Below are images from the *Elodea* wet mounts. Use these images to complete your drawings and answer the following questions. Draw what you see. You don't have to draw the entire picture. The important part of this exercise is to correctly label what you draw and only label what you see.

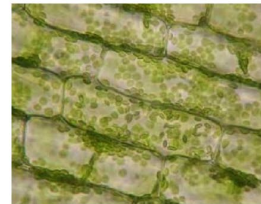
Objective Power 4x



Objective Power 10x



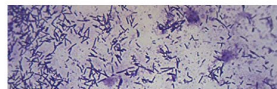
Objective Power 40x



Part 2: Single-Celled (Prokaryotic) Organisms

Below is an image from a bacteria slide. Use this image to complete your drawing and answer the following questions. Draw what you see. You don't have to draw the entire picture. The important part of this exercise is to correctly label what you draw and only label what you see.

Objective Power 100x

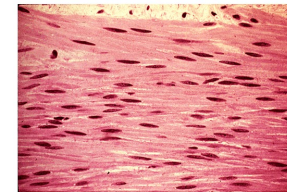


Directions:

Part 1: Smooth, Cardiac, and Skeletal Muscle

Below are images from the muscle slides. Use these images to complete your drawings in part 1 on page 193 and answer the following questions. Draw what you see. You don't have to copy the entire picture. These images were taken with the 40x objective lens.

Smooth muscle

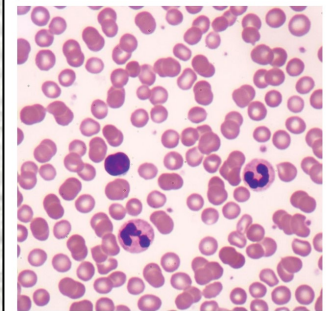


Cardiac muscle



Part 2: Observing Blood Smears

Your field of view is pictured below. Count all the red and white blood cells in this picture and record you data in Table 4.



Additional Foes and Adventures

- Fifteen WV high schools participate in the BIOL 101-104 ACCESS Early College Program. The makeup assignments were crucial to complete the courses in a timely manner while meeting the course learning objectives. For future semesters, the document camera will provide materials to these schools that may not have the funds to purchase all the laboratory supplies or may have failed experiments.
- Students with mobility or visual impairments benefit from the flexibility of the document camera to view microscopic images. The microscope adaptor allows these students to still practice the skills of getting an image into view and focused but projects the image onto a computer screen.