OVERVIEW OF THE STANDARD PACKAGE WITH LEARNING GOALS

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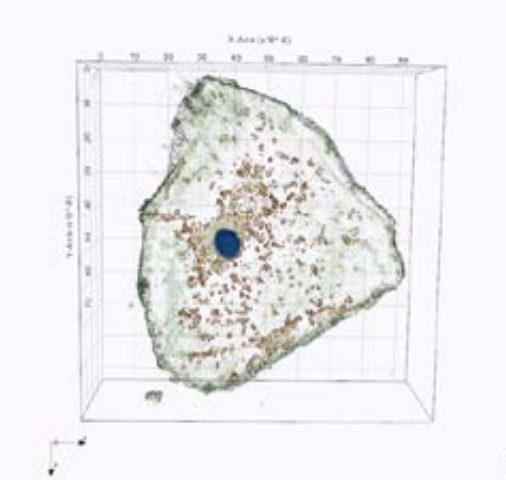
DISCOVER CHEEK CELLS

Students will explore cheek cells to learn about cell theory as well as the structure and size of cells.

LEARNING GOALS

- Identify different structures in eukaryotic (animal) cells: cell membrane, cytoplasm, and nucleus.
- Investigate that eukaryotes have a compartmentalized cell structure.
- Observe and learn about bacteria covering the surface of human cheek cells.
- Work with unit conversions to understand the size of cells.
- Collect evidence for the cell theory: All living organisms are composed of cells.

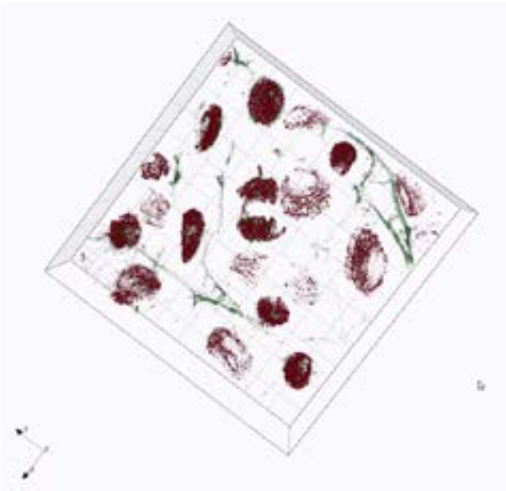


DISCOVER MITOSIS (ONION ROOT TIP)

Students will observe different stages of mitosis in onion root tips.

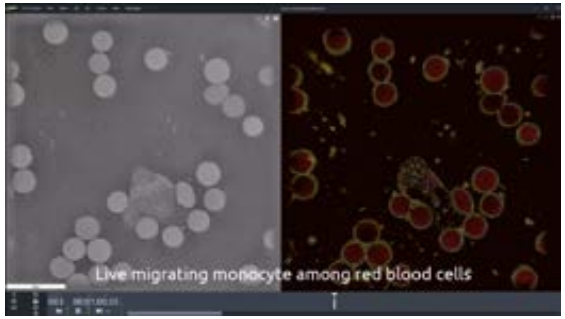
LEARNING GOALS

- Identify different structures in an onion cell (cell membrane, cytoplasm, nucleus, chromosomes).
- Distinguish different stages of mitosis in onion root cells.
- Explore the role of mitosis and differentiation in producing and maintaining complex organisms.
- Work with unit conversions to understand the size of cells.
- Compare the similarities and differences between plant and animal cells.
- Collect evidence for the cell theory: All living organisms are composed of cells.



DISCOVER BLOOD AND DISEASES

Students will explore the form and function of human blood cells (erythrocytes) and frog blood cells and they will learn about some blood diseases and observe the change in form that they imply.



LEARNING GOALS

- Explain how the structure of red blood cells helps their function.
- Identify the components of blood.
- Describe the life cycle of red blood cells.
- Understand how a change in shape of cells affects their function.
- Work with unit conversions to understand the size of cells.

DISCOVER ASEXUAL REPRODUCTION (YEAST)

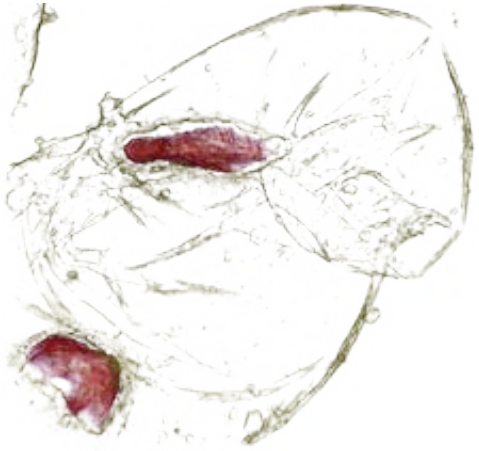
Students will observe two types of division in yeast (Saccharomyces cerevisiae and Schizosaccharomyces pombe): budding and binary fission.

LEARNING GOALS

- Describe and compare two different forms of asexual reproduction (in yeast): budding and fission.
- Identify different structures in yeast cells: cell membrane, cytoplasm, and vacuoles.
- Analyze 4D datasets and provide conclusive descriptions of the process.
- Work with unit conversions to calculate the duration of dynamic processes.
- Collect evidence for the cell theory: All living organisms are composed of cells.

DISCOVER CARBOHYDRATES (BANANA CELLS)

Students will observe how and where plants store energy (in the form of starch or glucose), by looking at banana cells.



LEARNING GOALS

- Explain why ripe bananas taste sweeter than unripe bananas.
- Identify where starch is stored in a banana cell.
- Recognize different elements of a banana cell (cell wall, cytoplasm, amyloplast).
- Collect evidence for the cell theory: All living organisms are composed of cells.