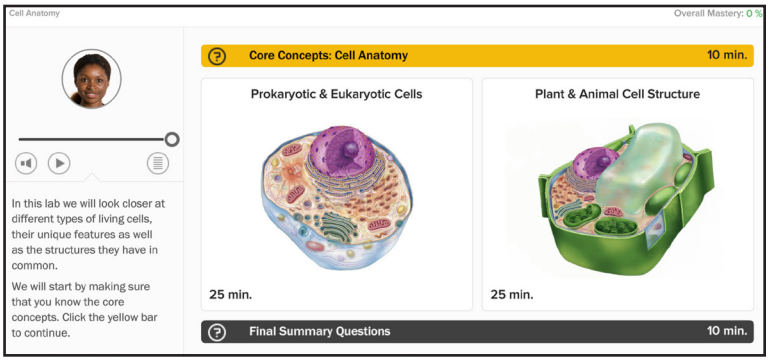
LearnSmart Labs® Microbiology

Cell Anatomy

General Lab Outline

I. Core Concepts
II. Prokaryotic and Eukaryotic Cells Exercise
III. Plant and Animal Cell Structure Exercise
IV. Final Summary Questions



Assessed Learning Outcomes

Core Concepts: Cell Anatomy

A. Understand the cell's importance as the basic unit of life
B. Understand that all living organisms are made of cells
C. Recall characteristics common to all cells: DNA, cell membrane, cytoplasm
D. Understand that living cells are divided into prokaryotes and eukaryotes, and these are structurally different

Prokaryotic & Eukaryotic Cells Exercise

A. Human kidney cells
   1. Simulator: Kidney Tissue
      a. Recall the main structures of eukaryotic cell
   2. Label Game: Kidney Tissue
   3. Further review
      a. Recall the structural difference between eukaryotes and prokaryotes
      b. Recall the main structures of a prokaryote

Animal & Plant Cell Structure Exercise

A. Animal & Plant Cells
   1. Label Game: Main structures of animal and plant cells
   2. Further Review
      a. Understand the structural differences between plant and animal cells
      b. Identify structures found in both animal and plant cells

3. Simulator: Elodea Cells
   a. Identify the main structures of a plant cell on two microscopy slides (one of normal Elodea cells and one of cells in hypertonic solution)
4. Further review
   a. Identify which structures plant cells and prokaryotes have in common
   b. Understand the function of chloroplasts in plant cells
   c. Understand the function of the cell wall in plant cells
   d. Understand the function of the central vacuole in plant cells

Final Summary Questions

A. Understand which cell type, prokaryotic or eukaryotic, is characteristic of different organisms
B. Describe and discuss relationships between cell structure, function, and multicellularity
C. Identify the chloroplast as the site of photosynthesis in green plants
D. Understand the adaptive significance of organelles characteristic of plant cells

Student Instructions for Simulators

Prokaryotic & Eukaryotic Cells

Task: View the slide of kidney tissue and identify the main structures of the eukaryotic cell.

Plant & Animal Cell Structure

Task: View the two slides of Elodea and identify the main structures of the plant cell.