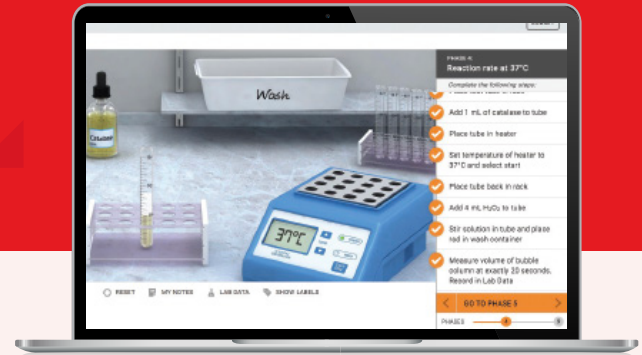


A Realistic Simulated Lab Experience

Biology

Your students will be better prepared for lab, more efficient, and retain more of the fundamental skills necessary for a successful laboratory experience.



1st Lab Tutorial

- Virtual Labs Tutorial

Applying the Scientific Method

- Pillbug Preference

Aseptic Technique

- Broth Culture to Sterile Agar Plate
- Broth Culture to Sterile Broth
- Slant Culture to Sterile Agar Slant

Bacterial Genetics

- DNA Profiling
- Polymerase Chain Reaction (PCR)
- Bacterial Transformation

Basic Chemistry

- Density of a Cube
- Synthesis of Calcium Carbonate
- Titration of Vinegar
- Chemistry for Biology
- Properties of Water

Blood

- Differential White Blood Cell Count
- Hematocrit
- Hemoglobin Content
- Blood Typing

Cardiovascular Physiology

- Pulse Rate
- Blood Pressure
- Electrocardiography
- Heart Auscultation
- Cardiac Cycle- Concept Overview Physiology Interactive*
- Blood Pressure - Concept Overview Physiology Interactive*

Cell Division

- Examining Meiosis
- Examining Mitosis

Cell Structure

- Examining Plant & Animal Cells
- Prokaryotic and Eukaryotic Cell Size, Shape, and Function

Cell Membrane Transport

- Passive and Active Process of Membrane Transport – Concept Overview Physiology Interactive*
- Cellular Respiration
- Yeast Fermentation
- Measuring Energy Production in Plants

Chemical Composition of Cells

- Test for Starch
- Test for Sugars
- Digestion of Starch
- Emulsification of Lipids
- Test for Fat
- Test for Proteins

Control of Microbial Growth

- Effect of Ultraviolet Light
- Effect of Antiseptics and Disinfectants
- Antimicrobial Sensitivity Testing (Kirby-Bauer Method)

Diffusion

- Effect of Concentration on the Rate of Diffusion in a Semisolid
- Effect of Density of Media on the Rate of Diffusion
- Effect of Molecular Weight on the Rate of Diffusion in Air
- Diffusion Across a Selectively Permeable Membrane

Digestive System

- Enzymes & Digestion

Dissections

- Dissection Tutorial for Animals and Plants
- Earthworm (invertebrate)
- Mussel (invertebrate)
- Perch (vertebrate)

- Crayfish (invertebrate)
- Sea Star (invertebrate)
- Fetal Pig (vertebrate)
- Frog (vertebrate)
- Shark (Vertebrate)

DNA Biology and Technology

- Isolation of DNA
- Gel Electrophoresis
- DNA/RNA Structure
- Rapid Diagnostic Testing
- Transcription, Translation, and Mutation

Electromyography

- Motor Unit Recruitment
- Time to Fatigue

Endocrine System

- Influence of Thyroid Hormone on Temperature Regulation
- Effects of Blood Glucose Level- Concept Overview Physiology Interactive*

Environmental Studies

- Climate change
- Water Quality
- Soil and Agriculture

Evidence of Evolution

- Molecular Evidence
- Fossils and Comparative Anatomy
- Phylogeny and Cladistics
- Human Evolution

Eye and Vision

- Eye Dissection
- Accommodation of the Lens
- Astigmatism Test
- Blind Spot Demonstration
- Color Vision Test
- Convergence Reflex Test
- Pupillary Reflex Test
- Visual Acuity Test

A Realistic Simulated Lab Experience

Biology

How Enzymes Work

- Effect of Temperature
- Enzyme Activity
- Effect of pH
- Effect of Concentration

Human Genetics

- Chromosomal Inheritance During Meiosis
- Genetic Inheritance

Isolation Methods

- Quadrant Streak Plate Method
- Pour Plating Method
- Subculturing of Bacteria
- Quantitative Dilution of Bacteria
- Quantification by Colony Counting
- Optical Density

Lab Safety

- Hand Washing Procedure
- Personal Safety

Mendelian Genetics

- Monohybrid Plant Cross
- Fruit Fly Characteristics
- Monohybrid Fruit Fly Cross
- Dihybrid Plant Cross
- Dihybrid Fruit Fly Cross
- X-Linked Fruit Fly Cross

Metric Measurement

- Length
- Weight
- Volume
- Temperature
- Accuracy and Precision in Measurements for Biology
- Pipetting

Microbial Growth

- Oxygen Requirements & Anaerobic Jar
- Effects of Osmotic Pressure
- Effects of Temperature
- Oxygen Requirements and Fluid Thioglycolate Medium Tubes
- Effects of pH

Microscopy

- Operation of a Brightfield Microscope

Natural Selection

- Antibiotic-Resistant Bacteria
- Natural Selection in Insects

Nervous System

- Demonstrate Monosynaptic Reflexes
- Neuron Physiology - Concept Overview

Organismal Diversity

- Protists
- Survey of Bacteria

Osmosis

- Movement of Water Across a Selectively Permeable Membrane
- Tonicity in Red Blood Cells
- Tonicity in Elodea Cells
- Tonicity in Potato Strips
- Physiology Interactive

pH Balance

- Function of Buffers
- Antacids as Buffers

Photosynthesis

- Photosynthetic Pigments
- Comparing Green and Blue Light
- Determining Rate in White Light
- Monitoring Photosynthesis with Carbon Dioxide Uptake

Plants

- Angiosperm Reproduction
- Bloom Color and pH
- Gravitropism and Phototropism (Mustard Plant Seedlings)
- Gymnosperms
- Transpiration

Population Biology

- Growth and Competition

Respiratory System

- Mechanism of Breathing
- Pulmonary Function Tests
- Respiratory System - Concept Overview Physiology Interactive*

Lymphatic and Immune System

- Innate Immunity - Concept Overview Physiology Interactive*
- Adaptive Immunity - Concept Overview Physiology*

Sampling Ecosystems

- Biological Sampling
- Comparing Ecosystems

Skeletal Muscle

- Shoulder & Elbow Movement Exercise
- Electrical Stimulation
- Skeletal Muscle Contraction – Concept Overview Physiology Interactive*

Specimen Collection

- Collecting a Sputum Specimen

Spectrophotometry

- Apply Beer's Law to Determine Concentration of Dye

Staining

- Smear Preparation
- Gram Staining
- Acid-Fast Staining
- Capsule Staining
- Spore Staining

Transgenic Organisms

- Bt Corn

Ubiquity of Microorganisms

- Ubiquity of Microorganisms

Unknown Bacterial Identification

- Samples 1-10

Urinary System

- Urinalysis
- Glomerular Filtration – Concept Overview Physiology Interactive*
- Tubular Reabsorption/ Secretion-Concept Overview Physiology Interactive*

* Concept-based overview interactive simulations that cover difficult physiology topics



To explore the Blood Typing Virtual Lab, scan the QR code or click [here](#).



To explore the Virtual Labs website, scan the QR code or click [here](#).