

Middle School

TOPIC CATALOG

1.800.EDVOTEK

www.edvotek.com



Designed for the Classroom
SINCE 1987

THE BIOTECHNOLOGY EDUCATION COMPANY®

EDVOTEK®

The Biotechnology Education Company®

Edvotek® was the world's *first company* dedicated to demystifying biotechnology for young people. In 1987, we envisioned how the emerging area of biotechnology could *inspire* students to choose a career in science.

Since then, Edvotek® has *expanded* to become the world's *leading supplier* of safe, affordable and easy-to-use *biotechnology kits and equipment* designed specifically for education.

Let us help you bring the exciting world of biotechnology into your classroom!

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Middle School Science

Middle school is often one of the first times students truly get to experience hands-on science. Make it even more exciting by using an Edvotek® kit geared towards middle school science curriculums!

We provide easy-to-use labs and equipment to study the environment and pollution, human health, forensics, introductions to DNA, and uses of biotechnology.



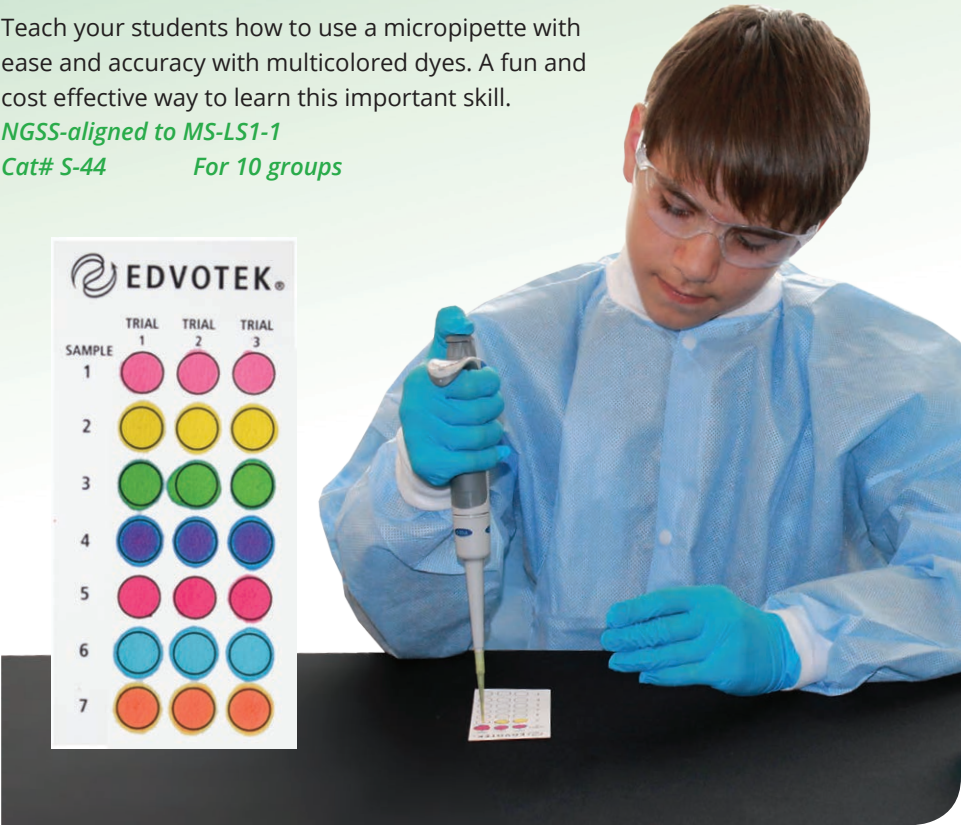
Introducing Biotechnology

Micropipetting Basics

Teach your students how to use a micropipette with ease and accuracy with multicolored dyes. A fun and cost effective way to learn this important skill.

NGSS-aligned to MS-LS1-1

Cat# S-44 For 10 groups

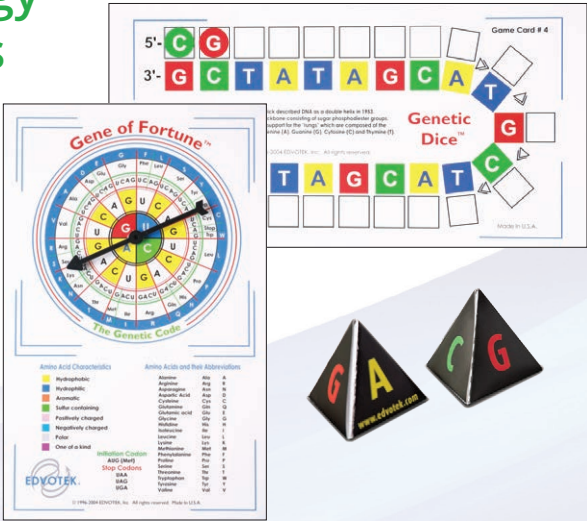


Molecular Biology Toys and Games

With Gene of Fortune™ and Genetic Dice™, students will reinforce topics of DNA and the genetic code.

NGSS-aligned to MS-LS3

Cat# S-80 For 10 groups



How Do You Clone a Gene?

In this kit, a set of multicolored links demonstrate a variety of molecular biology simulations. Students learn about digesting DNA with restriction enzymes, cloning genes in plasmids, protein structure and more!

Cat# S-20

For 5 groups



What is Osmosis?

Students will be introduced to the principles of osmosis. Activities will be performed utilizing dialysis tubing and various concentrations of salt. Dyes of different molecular weights will also be used to visually demonstrate the size selectivity of membranes.

NGSS-aligned with MS-LS1-2

Cat# S-74

For 5 groups



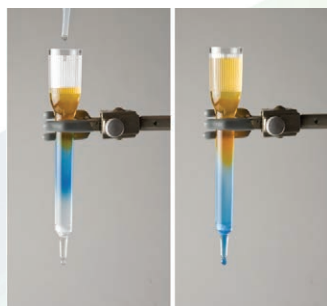
Principles of Gel Filtration Chromatography

Introduce chromatographic separation to your class and show them how dyes of different colors separate on the basis of their size and shape. This experiment contains materials for dye separation which include dye sample, elution buffer and plastic disposables.

NGSS-aligned with MS-PS1

Cat# 108

For 10 groups



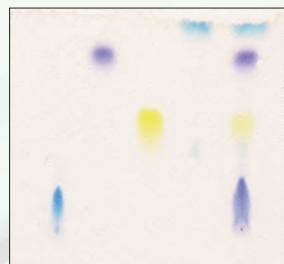
Principles of Thin-Layer Chromatography

This experiment introduces chromatographic theory and methods of thin layer chromatography. A mixture of dyes are separated on a cellulose-based TLC plate using two different solvent systems.

NGSS-aligned with MS-PS1

Cat# 113

For 8 separations



Introducing DNA

Nucleic acids are the building blocks of life. Introduce your students to the complex concept of DNA with a hands-on activity!

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Genes in a Tube™

Teach your students how to extract and spool their own DNA in this exciting and easy activity. Students can transfer their DNA to a tube that can be used as a pendant on a necklace!

NGSS-aligned with MS-LS1.A and MS-LS3.A

Cat# 119

For 26 students



Do Onions, Strawberries, and Bananas Have DNA?

Your students can construct DNA models and then extract DNA from onions, strawberries or bananas. You provide the fruit or vegetables and 95-100% isopropyl alcohol, your students extract DNA.

NGSS-aligned with MS-LS1.A and MS-LS3.A

Cat# S-75

For 10 groups



What Does DNA Look Like?

This fun and easy lab activity shows your students what real chromosomal DNA looks like and allows them to explore the procedures involved in DNA extraction. Just overlay with 95% ethanol or isopropyl alcohol and spool the DNA on the glass rod!

NGSS-aligned with MS-LS1.A and MS-LS3.A

Cat# S-10

For 10 groups



Forensics

Today's detectives work very closely with scientists as criminal investigators. The materials left behind at a crime scene can be the key to solving a crime. With forensic science kits by Edvotek®, you can transform your classroom into a CSI lab!

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Whose Fingerprints Were Left Behind?

After a crime has been committed, the evidence left behind can identify a potential culprit. Even in this age of DNA, fingerprints and blood stains are still important at helping to identify a criminal. In this experiment, your students will learn to detect and analyze fingerprints and then use these techniques to solve a classroom crime.

Cat# S-91

For 32 students

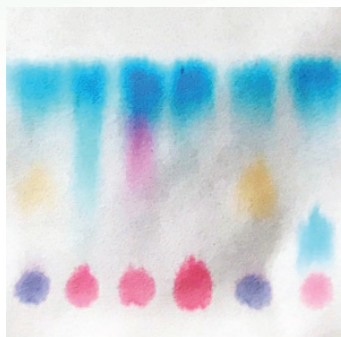


NEW! Write to a Fair Trial: Forensic Handwriting Analysis

Your lab notebook has been stolen, replaced with a ransom note demanding lunch money in exchange for its safe return! In this hands-on experiment, students will use principles of forensic handwriting analysis and paper chromatography to examine writing samples from 4 potential suspects. Only after careful analysis will they be able to solve the classroom crime.

Cat# 196

For 10 groups



Forensic Blood Typing

In this combination experiment, students are introduced to some of the techniques used by forensics scientists for analyzing blood. The students first check for the presence of blood typing using the phenolphthalein test. Then the students will apply the concept of blood type-based screening for potential suspect(s) present at a crime scene.

Cat# 191

For 10 groups



Forensic Enhancement Techniques

Trace amounts of blood are often sufficient to identify the individual responsible for any number of crimes, including murder, burglary, or assault. Enhancement procedures can make a small stain of body fluid or tissue visible to the naked eye. In this experiment, students will act as detectives following the aftermath of a drug bust. Reagents that are routinely used as a first screen will be utilized to detect simulated blood and DNA. In addition, biological materials will be recovered from splatters, blood trajectory, and small droplets of simulated human materials.

Cat# 194

For 10 groups



NEW! Forensic Toxicology

In today's forensic science laboratory, toxicologists identify drugs and toxins in samples collected from crime scenes, victims, and potential suspects. If present, the toxicologist also determines whether the drug or toxin contributed to a person's behavioral changes or death. In this forensic science experiment, students will use the Enzyme Linked Immunosorbent Assay (ELISA) to analyze simulated crime scene samples for the presence of drugs.

Cat# 195

For 10 groups

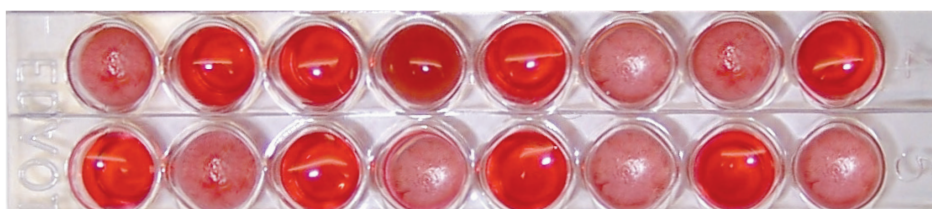


Blood Typing

ABO typing of blood left at the scene of a crime can help to narrow down a list of suspects. In this experiment, your students will use agglutination to identify the blood group of unknown blood samples as a step to identify a criminal.

Cat# 140

For 10 groups



Forensic Antigen Detection

In this experiment, students will determine the validity of the hypothesis set forth by a detective in a homicide case. Using an antigen-antibody solution, students will perform the Outcheterlony procedure and determine if the blood left at the scene of the murder is human or feline.

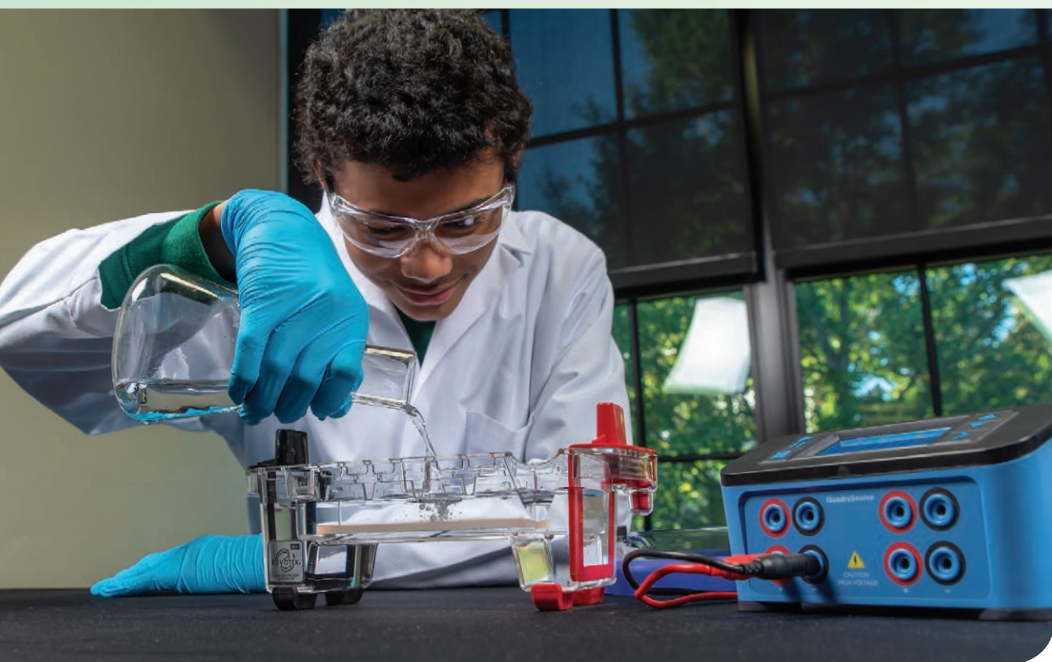
Cat# 192

For 10 groups





Analyzing DNA Using Gel Electrophoresis

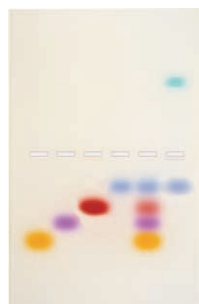


Principles and Practice of Agarose Gel Electrophoresis

DNA analysis is performed through gel electrophoresis. Demonstrate to your class how electrophoresis separates molecules on the basis of size and charge. Students will separate dyes packaged in QuickStrips™ in a safe, colorful, fast and simple experiment to teach a technique that's sure to engage your students.

Cat# 101

For 8 gels



DNA DuraGel™

Let your students practice loading electrophoresis gels without making batches of agarose over and over again! Try a re-usable DuraGel™! Students can practice loading their gels dry or under buffer so they'll be pro's when it comes to the real thing.

Cat# S-43

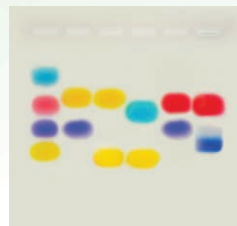


In Search of My Father

Your class will enjoy discovering the true identity of two boys who were separated from their parents a decade ago. Their mothers are identified by mitochondrial DNA and their fathers from chromosomal DNA. Will there be a happy ending to the story?

Cat# S-49

For 10 lab groups



Linking Food Science to Biotechnology: Unlock the Color of Candies

Investigate how agarose gel electrophoresis unlocks the color code used by food scientists to make colorful candies! Students will extract color from common candies and separate the dyes using agarose gel electrophoresis. A fun lab extension involves the use of candy to build a DNA model.

Cat# S-47

For 10 lab groups



Why Do People Look Different?

Why do some people have blue eyes and some brown? Why are some tall and some short? Teach your students how an individual's physical traits are a reflection of one's genes. In this simulation, your students will use electrophoresis to separate dyes which represent genetic traits.

Cat# S-50

For 10 lab groups



Whose DNA Was Left Behind?

DNA obtained from just a single hair left behind at a crime scene can be used to identify a criminal! In this experiment, your students will compare simulated crime scene DNA with that of two suspects.

Cat# S-51

For 10 lab groups



The Secret of the Invisible DNA: A Genetics Exploration

Explore genetics with our “out of this world” experiment! In this lesson, we explore how DNA technology can be used to explore the relationship between genotype and phenotype using one of two exciting scenarios (alien genetics or medical diagnostics). Fluorescent dyes simulate DNA fragments, eliminating post-electrophoresis staining and saving you valuable classroom time!

Cat# S-52

For 10 lab groups



Linking STEM to Agarose Gel Electrophoresis

Help your students learn about the technique and application of gel electrophoresis. These dyes can be separated in agarose gels and students will use core STEM tools to determine band size and utilize critical thinking and reasoning skills. Four unique module options are supplied: crime scene simulation, paternity simulation, GMO detection simulation, and cancer gene detection simulation.

Cat# S-46

For 10 gels



STEM

Mystery of the Crooked Cell

Transform your class into a biomedical laboratory! This simple lab allows your students to detect the mutation that causes Sickle Cell Anemia. In this simulation, your students will use electrophoresis to separate dyes that represent patient samples and controls.

Cat# S-53

For 10 lab groups



DNA Paternity Testing Simulation

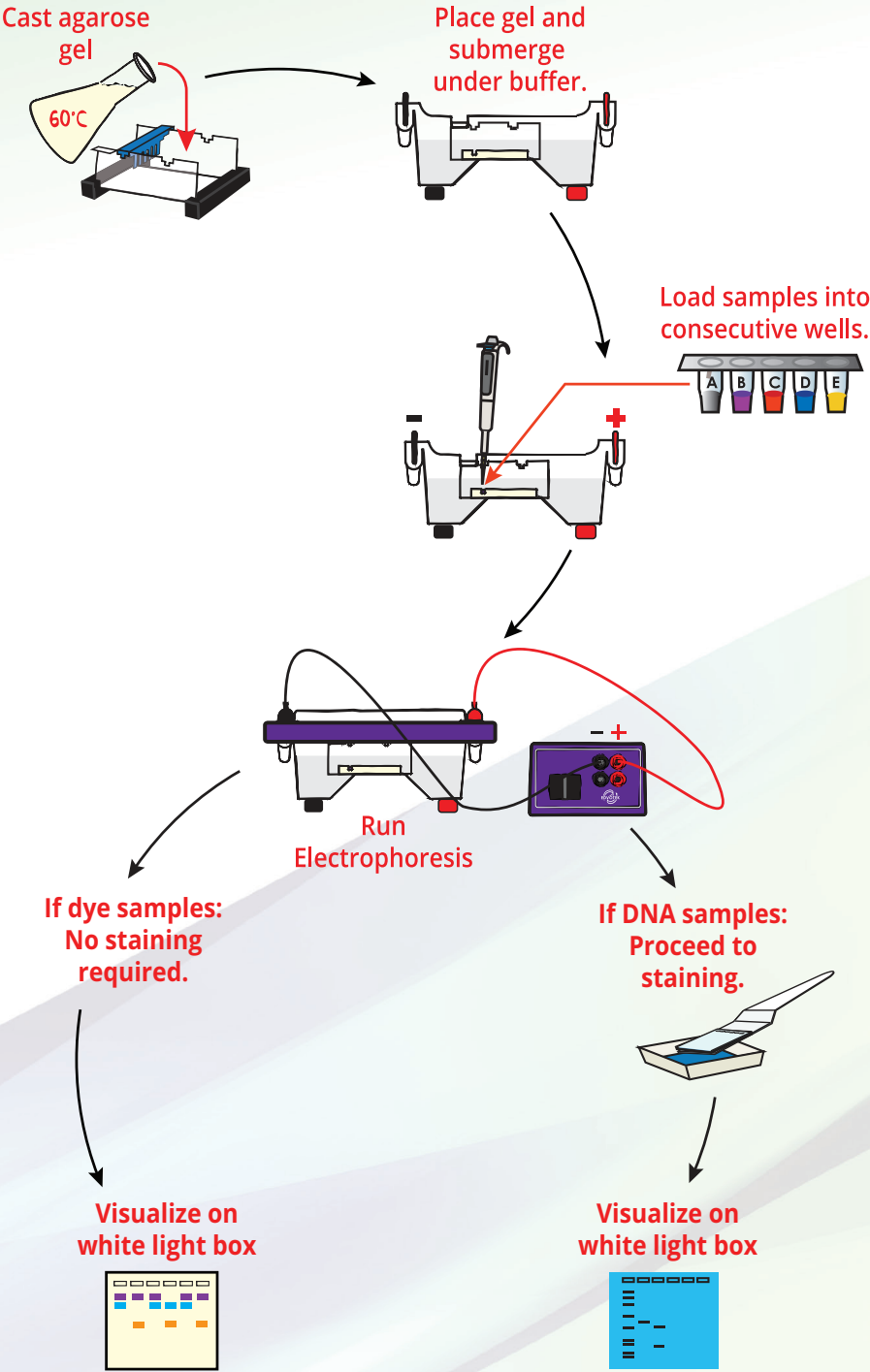
Who is the father? This experiment introduces students to the use of DNA fingerprinting in a simulated paternity determination. A child's DNA fingerprint is compared with his parents.

Cat# 114

For 8 gels



OVERVIEW OF GEL ELECTROPHORESIS



Environmental Science and Pollution

The environment, systems, and pollution are major themes in middle school science. We only have one earth, and making sure students understand the basics of keeping it healthy are paramount. Instead of lecturing about the environment, have your students experience environmental science with hands-on experiments!

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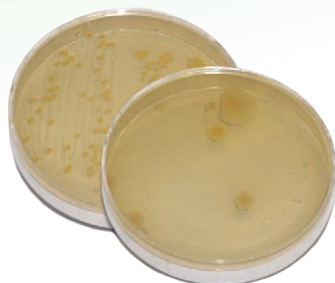
How Clean is the Water We Drink and the Air We Breathe?

Your class will make the invisible, visible! With this kit, your students will sample water and air and then grow any microbes present overnight. A safe and simple way to teach about everyday pollution.

NGSS-aligned with MS-LS1 and MS-LS2

Cat# S-30

For 10 groups



The Dose Makes the Poison: Testing the Environmental Impacts of Pollution

Biological assays, or bioassays, are powerful tools that allow scientists to determine the effects of a given substance on living organisms. In this inquiry-based lab, students plan and perform a plant bioassay to determine the environmental hazards of common point and non-point source pollutants. The results are analyzed using averages, standard deviations, and TC50 calculations, integrating STEM.

NGSS-aligned with MS-LS1 and MS-LS2

Cat# 905

For 10 groups

STEM



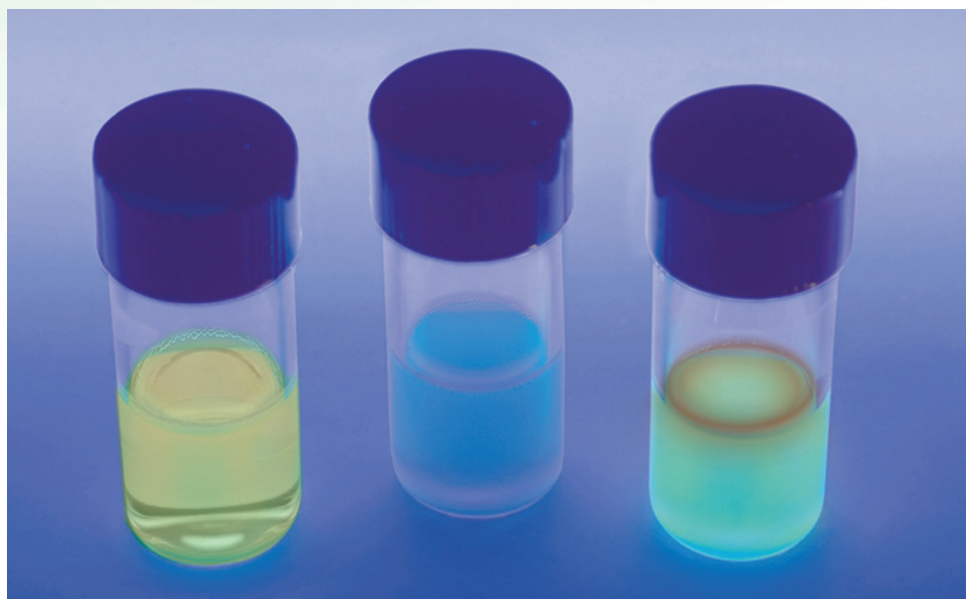
Water Quality Testing: Chromogenic Analysis of Water Contaminants

Testing drinking water for every possible type of pathogenic bacteria is slow and costly. Thus, drinking water is tested for coliforms - including the familiar *E. coli*. Presence of coliforms is an indicator of fecal contamination. In this experiment, students will test for coliforms in simulated contaminated water using color and fluorescent reagents. They can use these same reagents to test water samples from the environment. As an extension activity, a Gram Stain test can be performed on the collected samples.

NGSS-aligned with MS-LS1 and MS-LS2

Cat# 951

For 10 groups



Plant Pigment Chromatography and Photosynthesis

Show your students how light-dependent reactions of photosynthesis can be captured by a colorimetric assay. They will gain an understanding of the biochemical process of photosynthesis and use thin layer chromatography to separate plant pigments.

Cat# 284

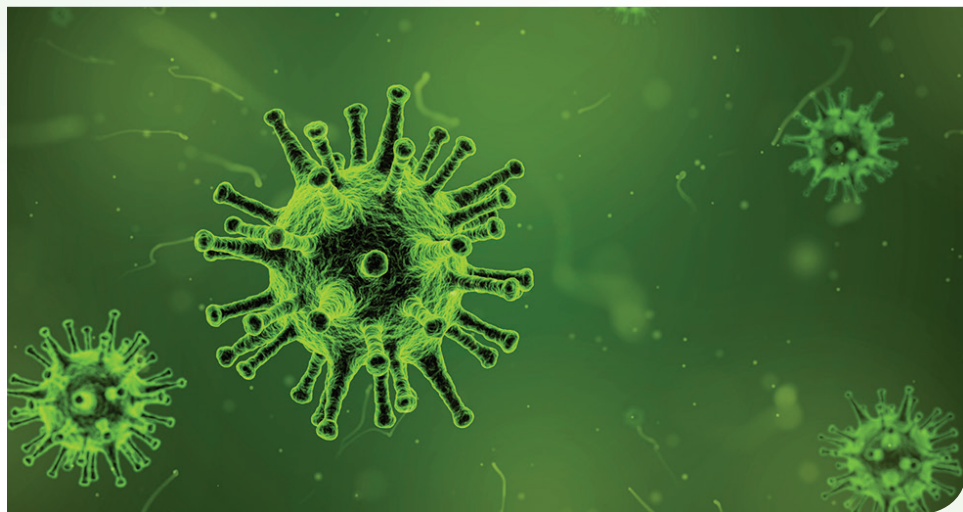
For 10 groups



Human Health

From body systems to infections, Edvotek® has everything you need to perform fun and engaging human health experiments in your classroom.

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Detection of a Simulated Infectious Agent

An infectious outbreak requires prompt and accurate identification of the biological agent. Often, early clinical symptoms are first identified in exposed individuals and then infectious agents are identified by lab tests. In this kit, students will transmit a simulated infectious agent (chemical dye) between classmates. The simulated infectious agent is only visible under long UV light. The pattern of transmission and primary source will be documented.

NGSS-aligned with MS-LS2.C

Cat# 166

For 25 students



What is an Epidemic and How Does an Infection Spread?

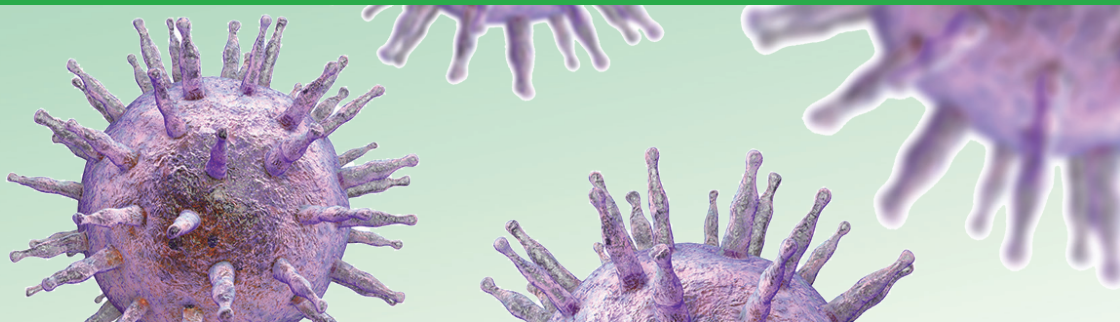
Infectious agents such as bacteria and viruses can spread rapidly through a population and cause widespread disease and death. In this experiment, your students will use colored solutions to simulate the spreading of a disease in the classroom.

NGSS-aligned with MS-LS2

Cat# S-68

For 10 groups





In Search of the Kissing Disease

Infectious mononucleosis is commonly known as the "kissing disease".

The causative agent is Epstein-Barr virus (EBV) which can be transmitted through saliva during kissing. In this experiment, students search for the presence of EBV using the ELISA reaction to detect specific viral proteins.

NGSS-aligned with MS-LS1

Cat# 274 For 10 groups



NEW! Researching Alzheimer's Disease by ELISA

Alzheimer's Disease is one of the most widespread and tragic neurodegenerative diseases. Alzheimer's Disease is characterized by memory loss and a decline of cognitive ability, but researchers are still trying to understand how it happens. In this kit, your students will become neuroscience researchers and try to link the level of A β peptides in patients' CSF as a potential biomarker.

Cat# 1116 For 10 groups

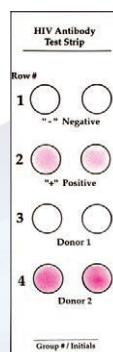


How Does a Doctor Test for AIDS?

Your body defends itself from attack by infectious agents like bacteria and viruses by producing antibodies. Enzyme Linked Immunosorbent Assays (ELISAs) test for antibodies present in the blood, which indicate infection. In this kit, students perform a simulated ELISA test to identify infected samples and compare them to control samples.

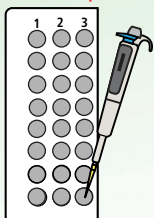
NGSS-aligned with MS-LS1 and MS-LS2

Cat# S-70 For 10 groups

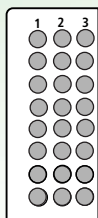


OVERVIEW OF AN ELISA

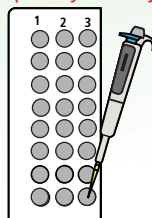
1. LOAD samples



2. INCUBATE



4. ADD primary antibody



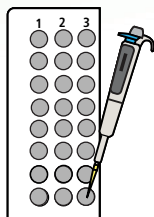
3. WASH & INVERT



5. WASH & INVERT



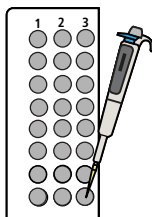
6. ADD secondary antibody



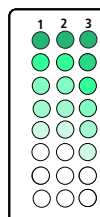
7. WASH & INVERT



8. ADD substrate



9. VISUALIZE color change



What's In My Lunch? Quantitative Milk Allergy ELISA

Milk proteins are the most common food allergens in children. Accurate detection and labeling is vital to inform consumers about potentially dangerous foods. In this inquiry-based experiment, students will master the concepts behind the enzyme-linked immunosorbent assay (ELISA). Students will perform an ELISA to detect the presence and measure the concentration of whey protein in various food products.

NGSS-aligned with MS-LS1

Cat# 266

For 10 groups



NEW! Scents and Sense-ability

The objective of this experiment is for students to understand that olfactory receptors respond to smells and transmit them as signals to the brain. Students will also be able to understand the principles of thin layer chromatography and how they apply to separation of olfactory compounds.

NGSS-aligned with MS-LS8

Cat# 1100

For 10 groups



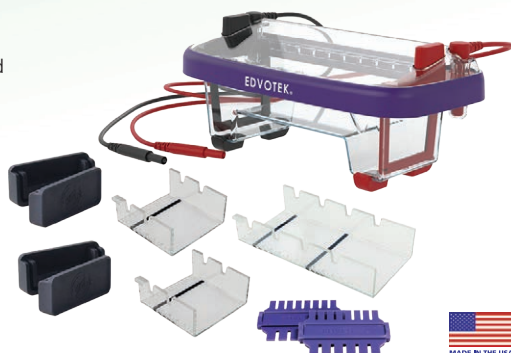
Equipment

M12 Complete™ Electrophoresis Package

Run the full spectrum of horizontal electrophoresis experiments with this versatile package! Our newly reimagined M12 Complete™ supports one or two student groups in two standard length gel trays for experiments that require less separation, or one long gel tray for experiments that require more. Produces excellent results in 10-20 minutes and includes a lifetime warranty.

Features:

- Sleek New Design Speeds Electrophoresis
- Complete Set of Electrophoresis Accessories Included
- Contoured Lid for Enhanced Gel Visualization
- Large Color Coded Push Tabs for Easy Lid Insertion and Removal
- Pour Spout for Buffer Disposal
- Improved Ventilation Reduces Lid Condensation
- User Replaceable Electrodes
- Reverse Compatible with Previous Edvotek® Accessories
- Ability to Run at High Voltage Saves Time
- US Design Patent No. D749,235
- Made in USA



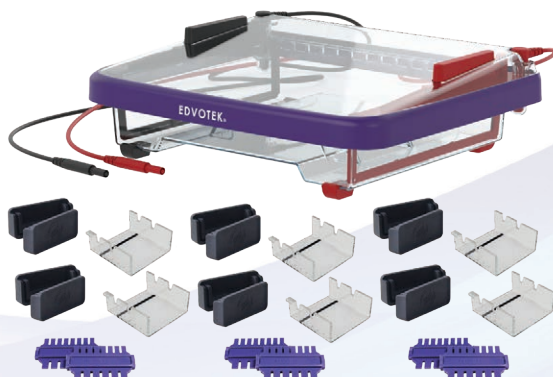
Cat# 502-504 *For 1 or 2 lab groups*

M36 HexaGel™ Electrophoresis Apparatus

The latest in electrophoresis design! Our newly reengineered M36 Electrophoresis Apparatus supports up to six student groups. Produces excellent results in 10-20 minutes and includes a lifetime warranty.

Features:

- Sleek New Design Speeds Electrophoresis
- Contoured Lid for Enhanced Gel Visualization
- Large Color Coded Push Tabs for Easy Lid Insertion and Removal
- Pour Spout for Buffer Disposal
- Improved Ventilation Reduces Lid Condensation
- User Replaceable Electrodes
- Reverse Compatible with Previous Edvotek® Accessories
- Ability to Run at High Voltage Saves Time
- US Design Patent No. D749,235
- Made in USA



Cat# 515 *For 6 lab groups*



DuoSource™ 150

- 75/150 V, for 1 or 2 Units
Cat# 509



QuadraSource™

- 10-300 V, for 1 to 4 Units
Cat# 5010



White Light LED Transilluminator

Cat# 552

EDVOTEK® Variable Micropipette

- 5-50 μ L Micropipette
Cat. # 590



Fixed Volume MiniPipets™

- 35 μ L MiniPipet™
Cat. # 587-2
- 40 μ L MiniPipet™
Cat. # 588



Yellow Tips, 1-200 μ L

- 2 racks of 96 each
Cat. # 636
- Bag of 1000 tips
Cat. # 636-B



Micro Transfer Pipets

- 400/pkg, disposable
Cat. # 632



Demonstration DNA Electrophoresis LabStation™

- M12 Complete™ Electrophoresis Package
- DuoSource™ 75 Power Supply
- Fixed Volume MiniPipets™ (35 μ L)
- Yellow Micropipet Tips (Cat. #636)
- Whose DNA Was Left Behind? Kit #S-51
Cat. # 5061



Classroom DNA Electrophoresis LabStation™

- M36 Hexagel™ Electrophoresis Apparatus
- DuoSource™ 150 Power Supply
- 2 Fixed Volume MiniPipets™ (40 μ L)
- Yellow Micropipet Tips (Cat. #636)
- DNA Fingerprinting Kit #130
Cat. # 5062

**Details for all these products and MORE
can be found on our website!**

www.edvotek.com



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Transformation | Immunology | Biomedical Sciences
Cell Biology | Neurobiology | & More!

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