2020-2021

RESOURCE GUIDE

1.800.EDVOTEK
www.edvotek.com

Designed for the Classroom
SINCE 1987

EDVOTEK®

The Biotechnology Education Company®

Our Philosophy

Teaching should always be fun
Learning should always be enjoyable

Experiments should foster learning
Preparation should always be easy

Science shouldn't be expensive
The environment shouldn't suffer

Lessons should always be relevant
Science should never be called boring

DNA is nothing to be scared of
Science is a way of life

EDVOTEK®

Contents

*Advanced Placement Program is a registered trademark of the College Entrance Examination Board.

Science Education That Doesn't Harm the Environment

eco friendly education

What have we done so far?

- We've gone digital! Our Resource Guide can be downloaded from our website.
- We now send more direct shipments to our customers. This greatly improves our service and helps the environment.
- We use recycled cardboard in our kit box outer packaging.
- We decreased our plastic kit packaging.
- We recycle all toner cartridges and paper.
- We went paperless and now post all our instruction manuals online.
- The SDS for every product is now available online: www.edvotek.com/Safety-Data-Sheets
- Employees commute using public transportation to further reduce our carbon footprint. We also encourage people to walk, jog, and bicycle. Several of our employees telecommute.
- We moved into a renovated historic building centrally located in downtown Washington, DC. Reusing an existing structure saves a tremendous amount of energy! We also installed state-of-the-art high efficiency energy and water systems throughout.

EDVOTEK®

The Biotechnology Education Company®

Proudly serving you for over 30 years!

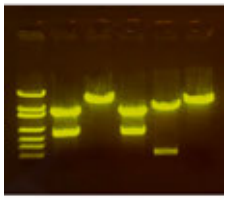
What's New?

Cat. #500
EDGE™ Integrated Electrophoresis System
See page 8!

Cat. #541-542
EdvoCycler™ 2
Redesigned! Doubles the capacity of the original! See page 7!

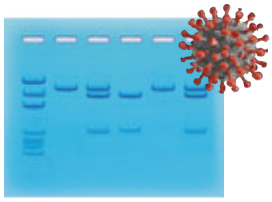
Cat. #540
EdvoCycler™ Jr.
Introducing our new 16-well personal PCR machine! See page 6!

Cat. #557
TruBlu™ 2 Blue/White Transilluminator
See page 14!

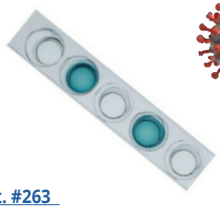


Cat. #210
A-maize-ing Editing: Using CRISPR to Improve Crops
See page 44!

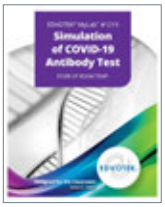
Cat. #310
Hack the Planet: Using CRISPR to Terraform Mars
See page 60!



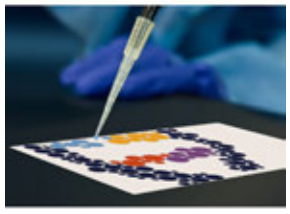
Cat. #123
Nucleic Acid Testing for COVID-19
See page 36!



Cat. #263
Expanding Our Testing: Using ELISA to Detect COVID-19
See page 79!



MyLab™ Custom Kit #1219
Simulation of COVID-19 Antibody Test
See page 23!



Cat. #S-45
Pipetting By Numbers: STEAM Pipetting Practice
See page 27!

Cat. #920
Safari Family Reunion
See page 36!

Cat. #342
Learn to Code! Introduction to Python for Detecting Disease
See page 22!

1

Cat. #540 Cat. #541-542

NEW

Cat. #540

EdvoCycler™ Jr.

For Up to 16 Samples. The EdvoCycler™ Jr. is the newest member of our PCR family and is based on the advanced EdvoCycler™ 2 platform. The sleek form factor has been miniaturized with 16 wells to run individual PCR experiments. A vivid and intuitive touchscreen and onboard computer simplify operation by not requiring a secondary device. And it's backed by an industry-leading 3-year warranty!

EdvoCycler™ Jr. Features:

- Holds 16 x 0.2 mL PCR Samples
- 7" HD Color Touchscreen Displays Real-Time Cycling Data
- Onboard Computer - No PC or Smartphone Required!
- Edvotek PCR Programs Included + Storage for 100 More
- Heated Lid Prevents Sample Evaporation
- Active Cooling to 14° C
- Temperature Range: 14-99° C
- Maximum Ramp Rate: 3.5° C
- Instant Incubate Function
- High Precision Algorithm for Superior Results
- Universal Voltage for Worldwide Use
- 3 Year Warranty

NEW

Cat. #541-542

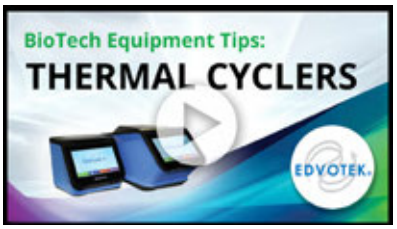
EdvoCycler™ 2

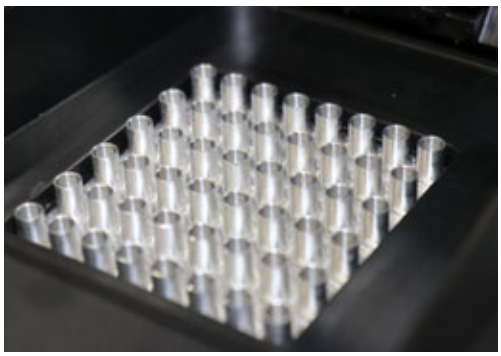
For Up to 48 Samples. The successor to the bestselling EdvoCycler™ has been redesigned and upgraded to be the best value among classroom thermal cyclers. The EdvoCycler™ 2 doubles the capacity of the original at 48 wells and features an intuitive touchscreen. Proudly made in the USA and backed by an industry-leading 3 year warranty!

EdvoCycler™ 2 Features:

- Holds 48 x 0.2 mL PCR Samples
- 8-Tube Strip Compatible
- 7" HD Color Touchscreen Displays Real-Time Cycling Data
- Onboard Computer - No PC or Smartphone Required!
- Edvotek PCR Programs Included + Storage for 100 More
- Heated Lid Prevents Sample Evaporation
- Active Cooling to 4° C
- Temperature Range: 4-99° C
- Maximum Ramp Rate: 3.5° C
- Instant Incubate Function
- High Precision Algorithm for Superior Results
- Universal Voltage for Worldwide Use
- 3 Year Warranty

Check Out Our Related Video:



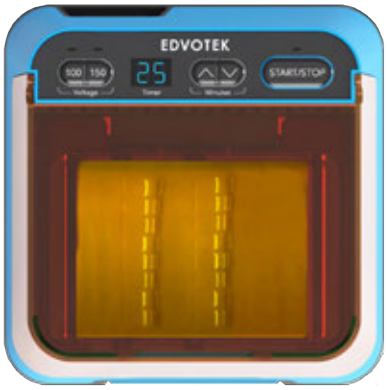


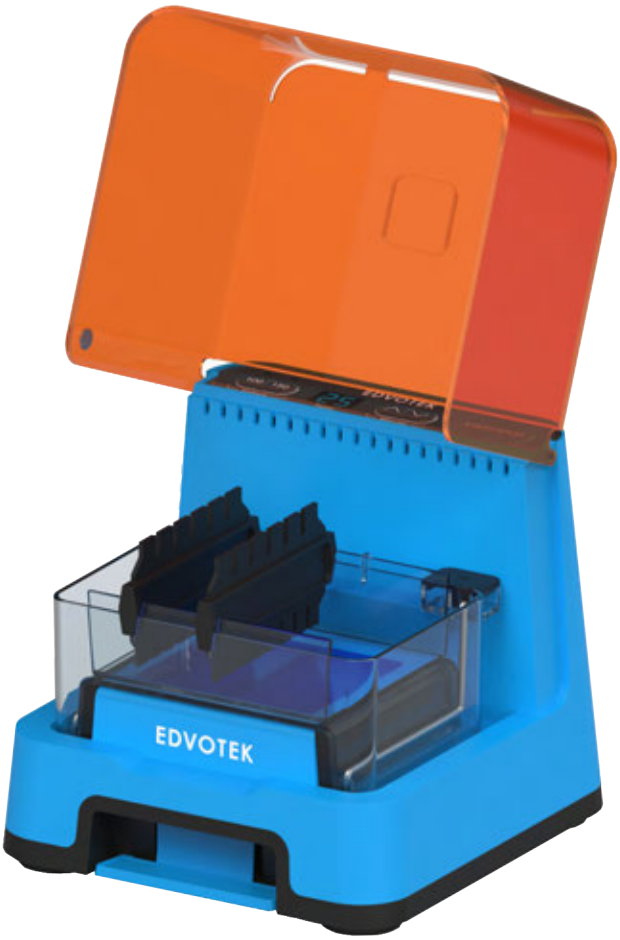
NEW

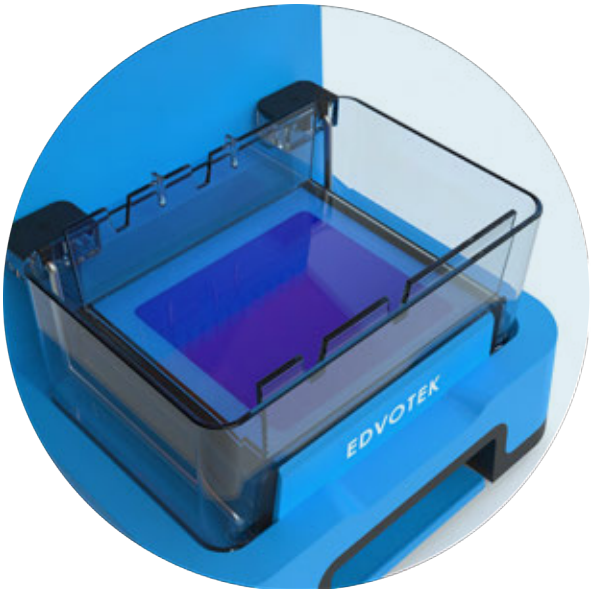
Cat. #500

EDGE™ Integrated Electrophoresis System

For 1 or 2 Lab Groups. The EDGE™ Integrated Electrophoresis System revolutionizes biotechnology by merging an electrophoresis chamber, power supply and blue light into a single, safe and easy-to-use apparatus. It runs a 10 x 7 cm gel in less than 10 minutes with crisp band resolution while enabling real-time visualization of DNA migration. And all EDVOTEK® and PLTW® electrophoresis experiments may be run without protocol adjustments. Bring the EDGE™ to your laboratory for the ultimate in convenience, performance and results.







The EDGE™ Features:

- <10 Minute Gel Runs for Fast, Real-Time Results
- Integrated Electrophoresis Chamber, Power Supply & Blue Light
- Dual 100/150 Volt Modes w/ Automatic Safety Cutoff Switch
- Includes 10 x 7 cm Gel Tray, Rubber End Caps & (2) 8/10 Tooth Combs
- Built-in Fan & Ventilated Design Prevent Condensation
- Compatible with SYBR® Safe, GelGreen® & Other Blue Light-Reactive Dyes
- Ready-to-Run™ EDVOTEK® & PLTW® Experiments
- Universal Voltage for Worldwide Use
- 3 Year Warranty

Ideal For Distance Learning!

PERFECT PARTNER

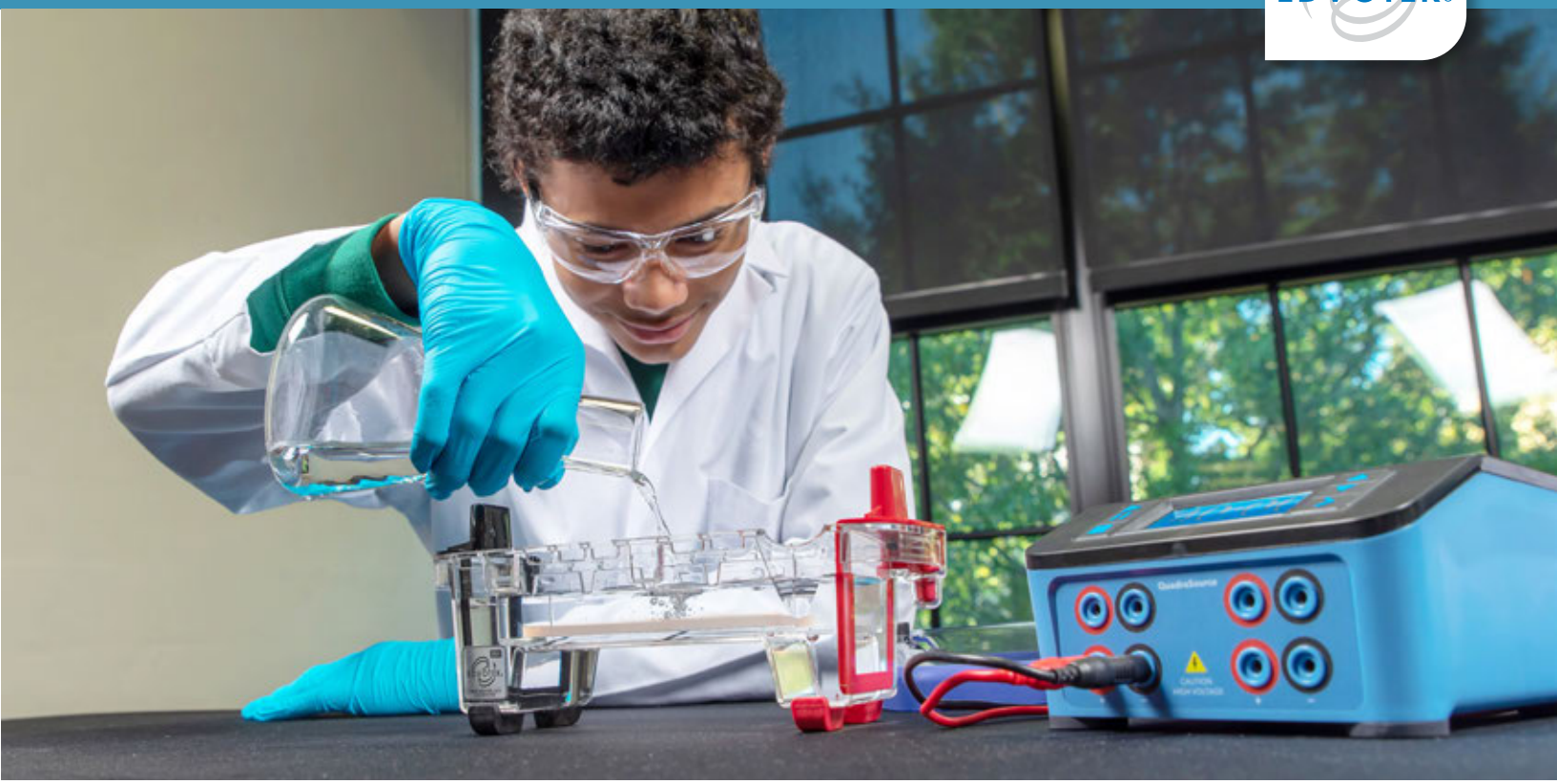
Cat. #540

EdvoCycler™ Jr.

Pair your EDGE™ Integrated Electrophoresis System with our 16-well personal PCR machine!

LIKE US ON SOCIAL MEDIA!

Facebook @edvotek
Instagram edvotek
Twitter @edvotek
YouTube edvotekinc
Pinterest edvotek

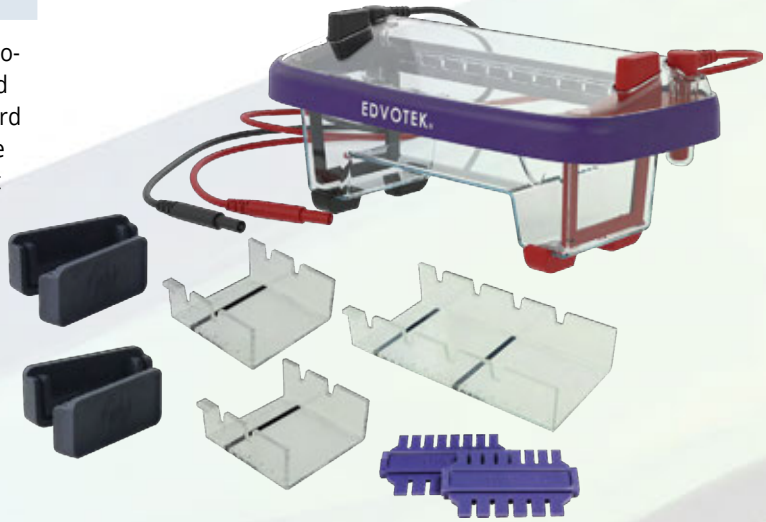


BEST SELLER

Cat. #502-504

M12 Complete™ Electrophoresis Package

For 1 or 2 Lab Groups. 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 15-30 minutes and includes a lifetime warranty.



M12 Complete™ Features:

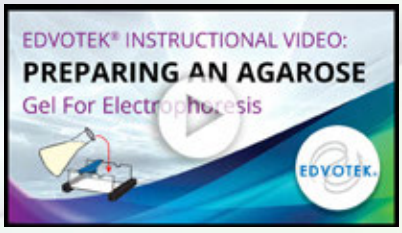
- Sleek New Design Speeds Electrophoresis
- Includes Complete Set of New & Improved Accessories
- Now Includes DNA DuraGel™ (Cat. #S-43) for Pipetting Practice!
- Large Color Coded Push Tabs for Easy Lid Insertion & Removal
- Pour Spout for Buffer Disposal
- Improved Ventilation Reduces Lid Condensation
- User Replaceable Electrodes
- Chamber Reverse Compatible with Previous Edvotek® Accessories
- US Design Patent No. D749,235
- Made in USA

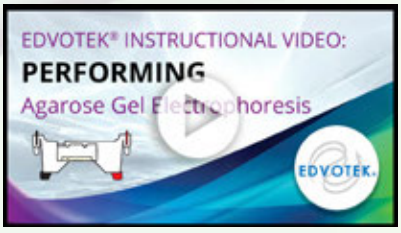
M12 Complete™ Includes:

- (2) 7 x 7 cm Gel Trays
- (1) 14 x 7 cm Gel Tray
- (2) 6/8 Tooth Combs
- (4) Rubber End Caps
- (1) DNA DuraGel™ (Cat. #S-43)

Lifetime Warranty & Tech Support!

Check Out Our Related Videos:



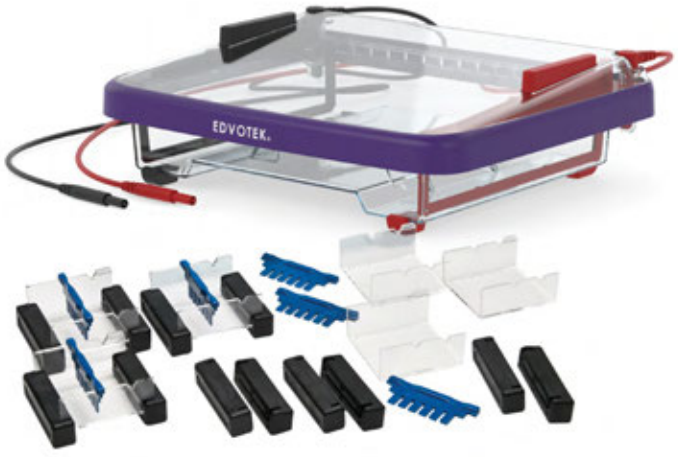


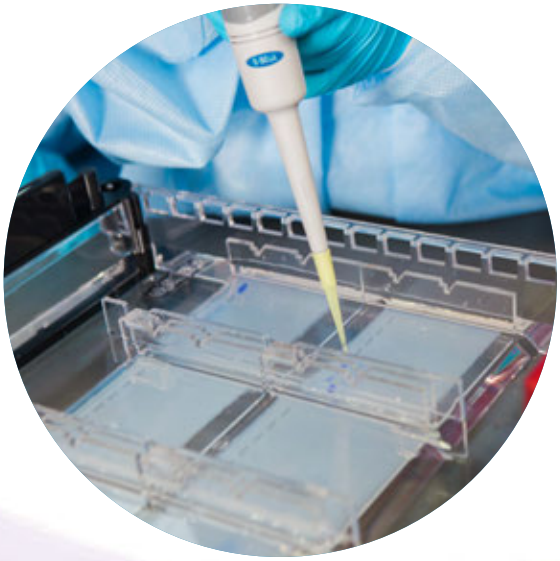
BEST SELLER

Cat. #515

M36 HexaGel™ Electrophoresis Apparatus

For up to 6 Lab Groups. The latest in electrophoresis design! Our newly reengineered M36 Electrophoresis Apparatus supports up to six groups of students. Produces excellent results in 30-40 minutes and includes a lifetime warranty.





M36 HexaGel™ Features:

- Sleek New Design Speeds Electrophoresis
- Includes Complete Set of New & Improved Accessories
- Now Includes a DNA DuraGel™ (Cat. #S-43) for Pipetting Practice!
- Contoured Lid for Enhanced Gel Visualization
- Large Color Coded Push Tabs for Easy Lid Insertion & Removal
- Pour Spout for Buffer Disposal
- Improved Ventilation Reduces Lid Condensation
- User Replaceable Electrodes
- Chamber Reverse Compatible with Previous Edvotek® Accessories
- US Design Patent No. D749,235
- Made in USA

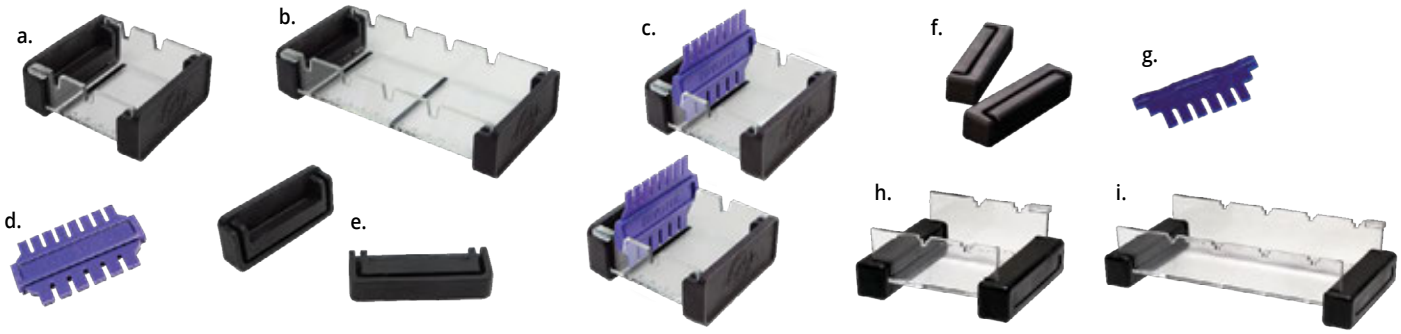
Economical! $avings for the entire class!

M36 HexaGel™ Includes:

- (6) 7 x 7 cm Gel Trays
- (6) 6-Tooth Combs
- (12) Rubber End Caps
- (1) DNA DuraGel™(Cat. #S-43)

Lifetime Warranty & Tech Support!

Electrophoresis Accessories



a. **Cat. #684-N**

NEW Next Generation E-Z Align™ Tray (7 x 7 cm)

Designed for use with M12 and M36 electrophoresis*. Features a highlighted gel loading line. Includes: (1) 7x7 cm gel tray and (2) rubber end caps.

b. **Cat. #685-N**

NEW Next Generation E-Z Align™ Tray (14 x 7 cm)

Designed for use with the M12 Electrophoresis Apparatus*. Features a highlighted gel loading line. Includes: (1) 14x7 cm gel tray and (2) rubber end caps.

* *Not Compatible with Classic electrophoresis accessories.*
** *Not Compatible with Next Generation electrophoresis accessories.*

c. **Cat. #535-N**

NEW Next Generation Gemini Split Tray™ Package

Includes: (2) 7x7 cm gel trays, (4) rubber end caps, and (2) Next Generation 6/8 Tooth Double Combs.*

d. **Cat. #683-N**

NEW Next Generation 6/8 Tooth Double Comb

Compatible with EDGE, M12 & M36 electrophoresis and yields sharper bands with a more secure fit!* Includes: (1) comb.

e. **Cat. #687-N**

NEW Next Generation Rubber End Caps

Compatible with Next Generation Gel Trays.* Includes: (2) rubber end caps.

f. **Cat. #687**

Classic Rubber End Caps

Compatible with classic trays.** Includes: (2) rubber end caps.

g. **Cat. #680**

Classic 6-Tooth Comb

Compatible with classic trays.** Includes: (1) comb.

h. **Cat. #684**

Classic E-Z Align™ Tray (7 x 7 cm)

Includes: (1) 7x7 cm gel tray and (2) rubber end caps.**

i. **Cat. #685**

Classic E-Z Align™ Tray (14 x 7 cm)

Includes: (1) 14x7 cm gel tray and (2) rubber end caps.**

Electrophoresis Staining

BLUE STAINING

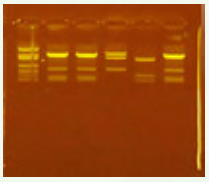
FlashBlue™ DNA Staining System

Cat. #609 10X Concentrate, For 1.2 L

InstaStain® Blue

Cat. #2003 7 x 7 cm sheets, For 40 gels
Cat. #2004 7 x 7 cm sheets, For 100 gels

FLUORESCENT STAINING



SYBR® Safe Stain

Cat. #608 10,000X Concentrate or 750 mL

InstaStain® Ethidium Bromide

Cat. #2001 7 x 7 cm sheets, For 40 gels
Cat. #2002 7 x 7 cm sheets, For 100 gels

Check Out Our Related Staining Videos:

Cat. #581

MV10 Vertical Electrophoresis Apparatus

For 1 or 2 Groups. The latest in electrophoresis design! Our newly redesigned MV10 gel tank is designed for easy separation of proteins on polyacrylamide gels utilizing our unique gel support cassette clip. It allows gels to be easily inserted or removed and holds them in place securely. The MV10 unit holds one 9 x 10 cm gel cassette and can accommodate most precast polyacrylamide gels.

MV10 Features:

- Sleek New Design Improves Run Speed
- Improved Support Clip Holds Gel Securely
- Push Tabs for Easy Lid Insertion & Removal
- Color-Coded for Foolproof Setup
- Stabilizing Feet Improve Balance & Cooling
- US Design Patent No. D757,958
- Made in USA

MV10 Includes:

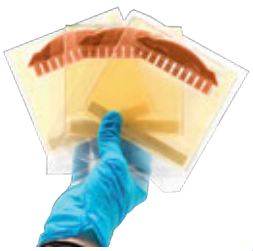
- (1) Gel Support Cassette
- Lifetime Warranty

The MOST student-friendly vertical electrophoresis on the market!

Lifetime Warranty & Tech Support!

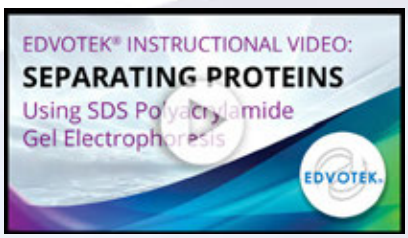
PRECAST POLYACRYLAMIDE GELS

- 4-20% Tris-Glycine-SDS Precast Polyacrylamide Gel (PAGE)
- Size: 9 x 10 cm
- Designed for Separating Protein Fragments 20-100 kDa
- Each Gel Has 10 Wells
- Well Volume is 30 µL
- Requires Refrigeration. Use within 3 months of receipt.



Cat. #650	Cat. #651	Cat. #652
One precast gel	Three precast gels	Six precast gels

Check Out Our Related Video:



NEW

Cat. #5010-Q

QuadraSource™ Power Supply

10-300 Volts for 1 to 4 units. Power any combination of EDVOTEK® electrophoresis units with this mighty power supply! Features a straightforward, fully programmable interface for setting voltage, current or timer control with each parameter displayed in real-time. Programs may be paused or resumed at any point. Run experiments in the least time possible with this powerful and versatile unit! Now features a sleek, new design without the added bulk!

QuadraSource™ Features:

- Max Voltage: 300 Volts
- Voltage Steps: 10-300 Volts
- Max Current: 500 Milliamps
- Output Type: Variable Voltage
- Lead Inputs: 4 Sets, Recessed, Color Coded
- Input Power: Universal Voltage
- Made in USA

BEST SELLER

Cat. #509

DuoSource™ Power Supply

75/150 Volts for 1 or 2 units. The DuoSource™ is our most popular electrophoresis power supply and runs gels quickly - in only 20 to 30 minutes at 150 V!

DuoSource™ 150 Features:

- Max Voltage: 150 Volts
- Voltage Steps: 75 or 150 Volts
- Max Current: 300 Milliamps
- Output Type: Constant Voltage
- Lead Inputs: 2 Sets, Recessed, Color Coded
- Fuse: 1.0 Amp 250 V Glass Fuse
- Input Power: #509: 60 Hz, 110 V; #9509: 50 Hz, 220 V
- Made in USA

NEW

Cat. #557

TruBlu™ 2 Blue/White Transilluminator

The successor to the popular TruBlu™ has been improved with an enlarged viewing surface and high density LED light layout for clear and even visualization. The blue light mode enables visualization of SYBR® Safe stained DNA gels and white light enhances visualization of blue stained DNA or protein gels. Use the TruBlu™ 2 to excite green fluorescent protein (GFP), producing brilliant green fluorescence. The TruBlu™ 2 has enough surface area to simultaneously view up to eight 7 x 7 cm gels and combines the functions of two units into one!

TruBlu™ 2 Features:

- Dual blue/white high density LED light modes
- Large viewing surface: 27 x 15 cm
- Orange contrast lid
- Safe – non-UV wavelength
- Blue light emission spectrum centered around 470 nm
- Built-in fan minimizes condensation

Developed in concert with the inventor of the technology under license from Clare Chemical Research, Inc.

Cat. #552

White LED Transilluminator

Our White LED Transilluminator features a 25 x 25 cm viewing area illuminated by long life LEDs and is housed in a slim aluminum body. It's designed to safely enhance the visualization of dye stained agarose gels or gels stained with FlashBlue™, proteins stained with Coomassie Blue, and autoradiograms.

Cat. #552 Features:

- 25 x 25 cm Viewing Area
- 90 Lumens LED Chips
- Power Rating: 8 Watts
- Universal Voltage: 110/220 V
- Frequency: 50/60 Hz
- Two-Year Warranty
- Made in USA

Cat. #558

Midrange UV Transilluminator

EDVOTEK®'s Midrange UV Transilluminator is designed to visualize DNA stained with either ethidium bromide or SYBR® Safe. The UV filter measures 7 x 14 cm which is optimized for viewing gels cast from EDVOTEK® electrophoresis chambers. Safety features include a UV blocking cover and an automatic power-cut off when the cover is opened.

Cat. #558 Features:

- 7 x 14 cm Filter Surface
- 302 nm Peak Wavelength
- Safety Cover Blocks 99% of UV Light
- Uses 8 Watt Bulbs for High Intensity
- Automatic Power Cut-off Safety Switch

ALSO Available:
Cat. #558-B
Replacement Bulb

Cat. #969

Long Wave UV Mini-Light

A hand-held UV light that is used to detect hydrolysis of the fluorescent substrate and fluorescent *Artemia* and *Daphnia* after their ingestion. Also useful for observing fluorescence in Green (GFP) and Blue (BFP) fluorescent proteins.

Cat. #969 Specifications:

- Wavelength ~400 nm
- 13 cm bulb length
- Powered by (4) AA batteries (not included)

EDVOTEK® Variable Micropipettes

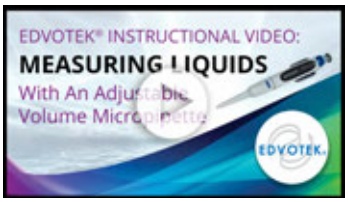
- *New & Improved*
- *Better Quality, Same Price*
- *More Durable*
- *More Ergonomic*

Our Variable Micropipettes are sturdily designed with volumes ranging from 0.1 to 5000 µL. They are easy to use, highly accurate and use standard micropipette tips. The volume is easily selected by twisting the top. The lightweight design and tip ejector makes operation fast & easy. A tool and instructions are included for self-calibration. Features a lifetime warranty.

Cat. #589-2	0.1 - 2.5 µL	Micropipette
Cat. #589	0.5 - 10 µL	Micropipette
Cat. #589-1	2 - 20 µL	Micropipette
Cat. #590	5 - 50 µL	Micropipette
Cat. #591	10 - 100 µL	Micropipette BEST SELLER
Cat. #591-1	20 - 200 µL	Micropipette
Cat. #592-1	100 - 1000 µL	Micropipette
Cat. #593-1	500 - 5000 µL	Micropipette

Lifetime Warranty

Check Out Our Related Videos:



Fixed Volume MiniPipettes™

Robust, accurate, easy to use, color coded, fun & cost effective micropipettes which use standard micropipette tips. No need to calibrate and impossible to measure the wrong volume!
All sizes use standard 1-200 µL tips.

Cat. #585	5 µL	MiniPipette
Cat. #586	10 µL	MiniPipette
Cat. #586-1	20 µL	MiniPipette
Cat. #587-2	35 µL	MiniPipette
Cat. #588	40 µL	MiniPipette BEST SELLER
Cat. #588-1	50 µL	MiniPipette
Cat. #588-2	75 µL	MiniPipette
Cat. #588-3	100 µL	MiniPipette
Cat. #588-4	200 µL	MiniPipette

Cat. #594

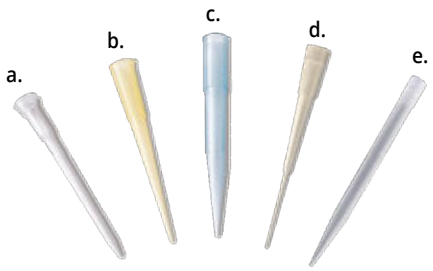
EdvoPette™ Pipet Controller

The all-new EdvoPette™ is a lightweight cordless pipetting controller ideally suited as an aliquoting tool for instructors and teaching assistants. It utilizes pipets from 1 - 100 mL and can be used for up to twenty hours when fully charged. Equipment bundle includes a charging station, long life Li-ion rechargeable (and replaceable) battery, adaptor nozzle for use with small volume pipets, multicolored nose cones, AC adapter with four international plugs, and three replacement filters. Dimensions: 15 x 152 x 41 mm.

EdvoPette™ Features:

- Operates with 100-240 volt (50/60 Hz 06.A) electrical supplies worldwide
- UV resistant housing and autoclavable pipette nozzle
- Universal (left/right), balanced, and ergonomic grip
- Three operation modes: high, low, and gravity
- Fits most filters – no need for pipet specific brands!

Micropipette Tips



a. Ultra Micropipette Tips

Cat. #635	0.5-10 µL, 2 racks of 96 each
Cat. #635-P	0.5-10 µL, 10 racks of 96 each
Cat. #635-B	0.5-10 µL, Bag of 1000 tips

b. Yellow Micropipette Tips

Cat. #636	1-200 µL, 2 racks of 96 each
Cat. #636-P	1-200 µL, 10 racks of 96 each
Cat. #636-B	1-200 µL, Bag of 1000 tips

c. Blue Micropipette Tips

Cat. #637	100-1000 µL, 2 racks of 100 ea.
Cat. #637-B	100-1000 µL, Bag of 1000 tips

d. Fine Tip Micropipette Tips

Cat. #638	1-200 µL, 1 rack of 204
Cat. #638-B	1-200 µL, Bag of 1000

e. Jumbo Micropipette Tips

Cat. #637-3	1000-5000 µL, Bag of 100 tips For Modern Variable Pipettes
Cat. #637-2	1000-5000 µL, Bag of 100 tips For Legacy Variable Pipettes (pre-2015)

Pipetting Pumps

Cat. #640	Green, for pipets 5-10 mL
Cat. #641	Blue, for pipets up to 2 mL

Serological Pipets

Cat. #645	5 mL, 50/pkg
Cat. #646	10 mL, 50/pkg

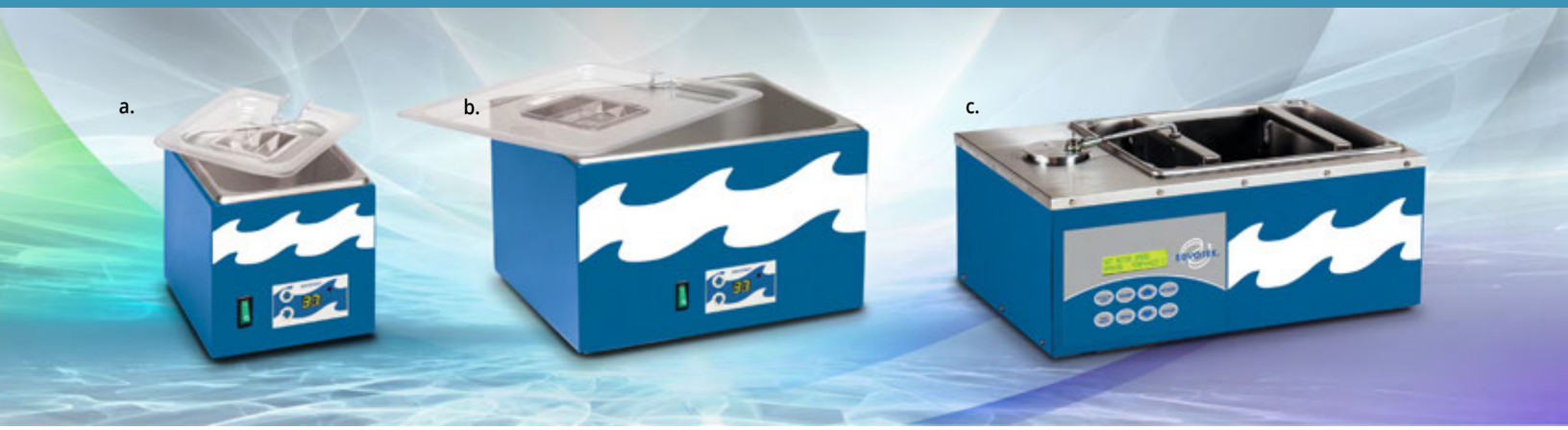
Pipette Stands

Cat. #796 **Pipette Carousel Stand**
For 6 Modern Variable Micropipettes

Cat. #796-C **Classic Pipette Stand**
For 6 Legacy Variable Micropipettes (pre-2015)

Micro Transfer Pipets

Cat. #632 400/pkg, disposable



a. EDVOTEK® 1.8 L Digital Water Bath

This classic Edvotek® 1.8 L Water Bath has been improved to now include digital temperature control! We've also added a low-water sensor to prevent burn-outs and deepened the chamber to hold more bottles and flasks. The stainless steel chamber is corrosion resistant and temperature controlled from ambient to 99 °C while using the included cover. 14 x 15 x 10 cm chamber. Made in USA. **Cat. #539**

b. EDVOTEK® 10 L Digital Water Bath

The EDVOTEK® 10 L Digital Water Bath incorporates digital temperature control! Features a low water sensor to prevent burn-outs and a deep chamber to hold virtually any bottle or flask. The stainless steel chamber is corrosion resistant and temperature controlled from ambient to 99 °C while using the included cover. 30 x 24 x 15 cm chamber. Made in the USA. **Cat. #538**

c. EDVOTEK® 10 L Digital Shaking Water Bath

The EDVOTEK® 10 L Digital Shaking Water Bath is designed for optimal sample incubation. Solutions are simultaneously shaken, heated and aerated to speed and improve reactions. The stainless steel shaker chamber may be set to rotate from 5-100 RPM. Temperature control is from ambient to 75 °C or 99 °C with the optional cover. 30 x 24 x 15 cm chamber. Made in the USA. **Cat. #5027**

ALSO Available: ***Cover for 10 L Shaking Water Bath*** *Cat. #5027-C*

Cat. #689

Water Bath Floats

Set of two, 11 x 8 cm.

Cat. #546

EDVOTEK® Incubation Oven

This economical bacterial incubator features a digital temperature control with a range from 5 ° above ambient to 60 °C. Ideal for growing bacteria on agar plates at 37 °C or for Southern and Western Blot analysis at 60 °C. Includes two adjustable/removable shelves for increased capacity. Accepts bottles and flasks up to 2 L.

- Internal Dimensions (w x d x h): 26 x 23.5 x 32.5 cm
- External Dimensions (w x d x h): 33.5 x 37 x 47.5 cm

a. Digital Orbital Shaker

EDVOTEK®'s Digital Orbital Shaker offers precise control with a microprocessor-based keypad with digital display. The user can control the RPM (40-350 RPM) and mode of operation. The unit can be used in Continuous Run mode and programmable Timed Run mode. Includes: 9 x 10" platform and 12 x 12" platform. Features a full one-year warranty. **Cat. #OR100**

b. Mezzo™ Microcentrifuge

Compact and easy to use, yet powerful enough to enable each workstation to be equipped with a centrifuge for a wide range of molecular biology separations and quick spins. Ideal for most protocols requiring fast spins (12,500 rpm / 9,800 x g). The Mezzo™ Microcentrifuge includes a 12-place rotor for 1.5/2.0 mL tubes, a 32-place rotor for 0.2 mL tubes, and twelve 0.2 mL and 0.5 mL tube adapters. A digital timer allows programs running from 15 seconds to 30 minutes. Dimensions: 20 x 17 x 11 cm. **Cat. #533**

c. Tornado™ Vortexer

The Tornado™ is your go-to appliance for vigorous and uniform vortexing. The versatile head can accommodate a wide range of common lab tubes and assay plates as well as any hand held items. A highly absorbent body shell and elastomeric feet effectively dampen vibrations and limit movement. Great for both intermittent and continuous mixing! **Cat. #5023**

Tornado™ Vortexer Features:

- Variable speed rotary for 1000, 2000, 3000 rpm
- Slider for intermittent, continuous, and off settings
- Innovative head has diverse holding capacity and can be removed for cleaning
- Dimensions: 17 x 19 x 20 cm
- Includes a two-year warranty

d. Piccolo™ Microcentrifuge

The Piccolo™ Microcentrifuge is reliable, flexible, and convenient for quick spin downs, micro-filter cell separations and cell pelleting. Its small footprint, non-slip base, and quiet operation make it ideal for the classroom. Other design features include a snap-spin rotor for tool-free hub exchanges and a palm-shaped lid that is suitable for left or right-handed users. **Cat. #534**

Piccolo™ Microcentrifuge Features:

- Operates with 110- 240 V (50/60 Hz 06.A) electrical supplies worldwide.
- Robust body designed that is maintenance free and easily cleaned.
- Maximum Speed of approx. 6,000 rpm (2000 x g).
- Holds six 1.5 mL/2 mL (or smaller) tubes or sixteen PCR tubes.
- Includes a one-year warranty.
- Powered by 12 V DC, includes double insulated worldwide power adapter, 110 V to 240 V, supplied with 4 different plugs for power adapter
- Dimensions: 15 x 13 x 10 cm
- Maintenance free
- Easily cleaned

e. UNICO® S1200 Visible Spectrophotometer

The UNICO® Model S1200 Visible Spectrophotometer is the best value in a precise, accurate 5 nm design. Featuring a large, easy to read digital display, visible wavelength range of 335-1000 nm, 5 nm bandpass, an USB & RS-232C interface, Four modes: T = transmittance, A = absorbance, C =concentration & F = factor, auto-zero function and a sample compartment that accepts round tube or square cuvettes. The S1200 also features built-in automatic second order filters for quick and easy operation, and bulb changes require no tools or alignment. Includes a box of 12 round optical glass cuvettes, a set of two optical square glass cuvettes, users manual and dust cover. **Cat. #567**

What Are LabStations™?

Are you excited to introduce electrophoresis to your students? Or maybe you're ready to see them running their own PCR or transformation experiments next year! Equipping your classroom with a biotechnology lab can be a challenge. What equipment do you absolutely need? How easily is it shared between students? How can you get a maximum value for every item? Edvotek LabStations™ are our answer these questions!

LabStations™ are pre-selected packages curated for specific activities, classroom sizes, and budgets. We've utilized our experience in the field of biotechnology education - and decades of important feedback from teachers - to select the best equipment combinations for the job. And by combining several products into a single comprehensive package we are able to sell them at a lower total price.

We also offer CUSTOM LabStations™ to suit your needs. For more information, consult with a BioEducation specialist at **1.800.EDVOTEK**.

NEW

Cat. #5073

EDGE™ PCR LabStation™

Includes:

1 Cat. #540 EdvoCycler™ Jr.
1 Cat. #500 EDGE™ Integrated Electrophoresis Apparatus
1 Cat. #590 Variable Micropipette (5 - 50 µL)

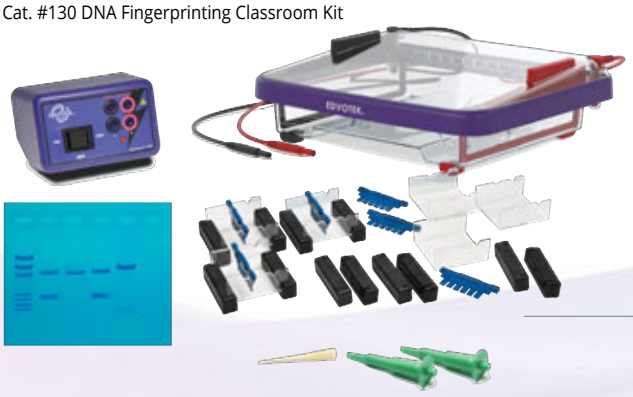
BEST SELLER

Cat. #5062

Classroom DNA Electrophoresis LabStation™

Includes:

1 Cat. #515 M36 HexaGel™ Electrophoresis Apparatus (Six 7x7 cm Trays/Combs/End Caps)
1 Cat. #509 DuoSource™ 150 (75/150 V for 1 or 2 units)
2 Cat. #588 Fixed Volume MiniPipette (40 µL)
1 Cat. #636 Yellow Micropipette Tips (1 - 200 µL / 2 Racks of 96)
1 Cat. #130 DNA Fingerprinting Classroom Kit



NEW

Cat. #5066

Personal PCR LabStation™

Includes:

1 Cat. #540 EdvoCycler™ Jr. (16 x 0.2 mL)
2 Cat. #502-504 M12 Complete™ Package (One 14 x 7 cm Tray & Two 7 x 7 cm Trays)
1 Cat. #5010-Q QuadraSource™ Power Supply (10-300 V, for 1 to 4 units)
2 Cat. #590 Variable Micropipette (5 - 50 µL)
1 Cat. #557 TruBlu™ 2 Transilluminator
1 Cat. #539 1.8 L Water Bath

NEW The Official Blog for EDVOTEK®

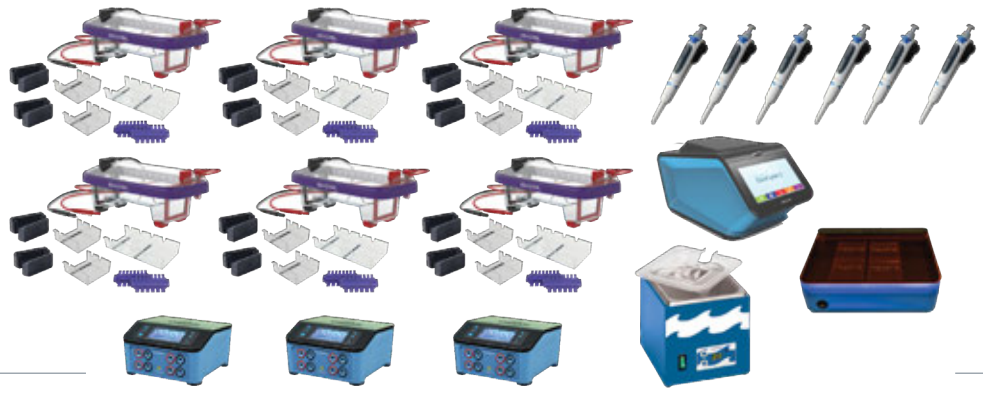
https://blog.edvotek.com/

Cat. #5067

Classroom PCR LabStation™

Includes:

1 Cat. #541-542 EdvoCycler™ 2
6 Cat. #502-504 M12 Complete™ Package
3 Cat. #5010-Q QuadraSource™ Power Supply
6 Cat. #590 Variable Micropipette (5 - 50 µL)
1 Cat. #557 TruBlu™ 2 Transilluminator
1 Cat. #539 1.8 L Waterbath

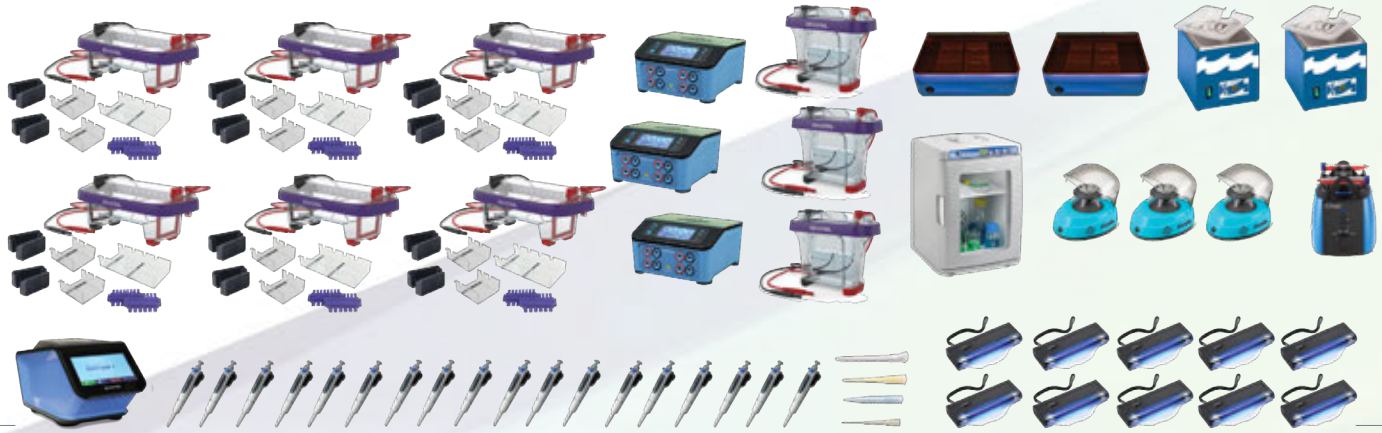


Cat. #5068

Comprehensive Biotechnology LabStation™

Includes:

1 Cat. #541-542 EdvoCycler™ 2 (48 x 0.2 mL)
6 Cat. #502-504 M12 Complete™ Electrophoresis Package
3 Cat. #581 MV10 Protein Electrophoresis Apparatus
3 Cat. #5010-Q QuadraSource™ Power Supply
6 Cat. #589 Variable Micropipette (0.5 - 10 µL)
6 Cat. #591 Variable Micropipette (10 - 100 µL)
6 Cat. #592-1 Variable Micropipette (100 - 1000 µL)
2 Cat. #557 TruBlu™ 2 Transilluminator
10 Cat. #969 Long Wave UV Mini-Light
2 Cat. #539 1.8 L Digital Waterbath
1 Cat. #546 Incubation Oven
3 Cat. #534 Piccolo Microcentrifuge
1 Cat. #5023 Tornado Vortexer™
3 Cat. #635 Ultra Micropipette Tips (0.1 - 10 µL / 2 Racks of 96)
6 Cat. #636 Yellow Micropipette Tips (1 - 200 µL / 2 Racks of 96)
3 Cat. #637 Blue Micropipette Tips (200 - 1000 µL / 2 Racks of 100)
3 Cat. #638 Fine Tip Micropipette Tips (1 - 200 µL / 1 Rack of 204)



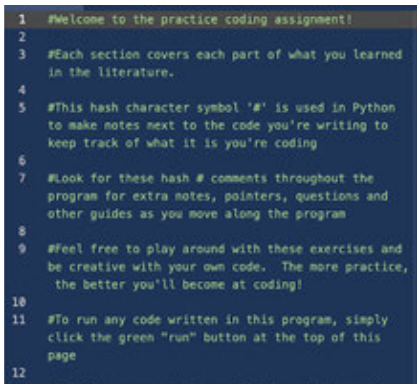
We also offer *CUSTOM* LabStations™ to suit your needs. For more information, consult with a BioEducation specialist at 1.800.EDVOTEK.

2

NEW

Cat. #342

Learn to Code! Introduction to Python for Detecting Disease



For Any Group Size! Bioinformatics is a field dedicated to biological data analysis; an interface between computers and human health. Scientists use powerful computers to create simulations of biological activity and process large data sets, making large and complex data sets easy to understand and analyze. In this experiment, students will learn how bioinformaticians process gene data, how they make sense of gene behavior, and what happens genotypically when a mutation occurs in a DNA sequence. First, students will be introduced to the basics of the coding language Python, and will then use these skills to identify a SNP in a simulated patient's DNA. No previous knowledge of coding necessary. *All you need is a computer with internet access!*

NEW EDVOTEK® At Home FREE Online Resources

Edvotek® at Home is a set of resources to teach the basics of Edvotek's labs through worksheets and presentations. While we believe in the importance of hands-on learning, these free online learning tools are ideal if you can not perform the hands-on experiments in class. www.edvotek.com/edvotek-at-home

- Cancer Gene Detection
- Restriction Enzyme Analysis of DNA
- Multiplex PCR of Water Contaminants
- Exploring the Genetics of Taste: SNP Analysis of the PTC Gene Using PCR
- Transformation: Exploring Biotechnology with GFP
- The ELISA Assay
- Chromatography
- Protein Electrophoresis

DISTANCE LEARNING

NEW MyLab™ Custom Kits

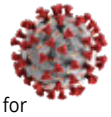
DISTANCE LEARNING

Are you planning a virtual curriculum or looking for experiments ideal for distance learning? With MyLab™ Custom Kits from EDVOTEK®, you can plan your curriculum and have all the materials sent directly to your students!

BEST SELLER

MyLab™ Custom Kit #1219

Simulation of COVID-19 Antibody Test



- Learn about antibody based detection techniques.
- Perform an ELISA at home.
- Understand current testing techniques for COVID-19 through a simulated experiment.
- Includes controls, antibodies, test strips, detection substrate, transfer pipettes.

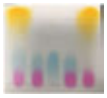
MyLab™ Custom Kit #1191

Forensics Blood Typing

- Learn about basic forensic detection techniques
- Swab simulated crime scene samples to detect blood left at the scene
- Analyze the crime scene samples to determine the suspect's blood type
- Understand presumptive vs. confirmatory testing

MyLab™ Custom Kit #1230

Crime Scene DNA Fingerprinting



In this simulation of DNA fingerprinting, students will utilize paper chromatography to analyze the crime scene and suspect samples to identify 'whodunnit'.

MyLab™ Custom Kit #1232

How Is Substance Abuse Determined?

Examples of substance abuse to enhance muscle mass for athletic performance are readily available. A second group of substances often result in addictive behavior that destroys the lives of individuals and family members. In this simulation, students test patient samples for illicit substances that can be detected in urine.

MyLab™ Custom Kit #1930

Invisible Footprints

What would happen if each person was in charge of their own personal atmosphere? In this colorful experiment, students actually are! Explore the global carbon cycle and climate change in a simple, positive, and intimate way.

BEST SELLER

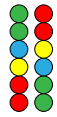
MyLab™ Custom Kit #1106

Micropipetting Basics

- Learn the critical skill of micropipetting
- Hands-on pipetting practice
- Understand the importance of micropipetting in science
- Includes instructions, fixed volume micropipette, tips, dyes, and pipetting sheet

MyLab™ Custom Kit #1103

Building DNA with Beads



- Understand DNA base pairing
- Model the structure of DNA
- Explore palindromes, restriction enzymes, DNA synthesis, and genetic engineering
- Includes instructions, 75 colored beads

MyLab™ Custom Kit #1104

Spooling DNA on a Stick

- Learn about living organisms and DNA
- Hands-on experiment using real DNA
- Spool DNA & visualize genetic material
- Includes chromosomal DNA, spooling sticks, transfer pipettes, DNA stain
- Alcohol included upon request

MyLab™ Custom Kit #1105

Extracting Fruit & Vegetable DNA

- Learn about the basics of cells and DNA
- Extract DNA from household fruits and vegetables
- Spool DNA to visualize genetic material
- Includes extraction buffer, test tubes, pipettes, and spooling stick
- Alcohol included upon request

MyLab™ Custom Kit #1108

Exploring Gel Filtration Chromatography

Introduce chromatographic separation to your students! In this experiment, students separate dyes of different colors based on their size and shape. This experiment contains materials for dye separation which include dye sample, elution buffer and plastic disposables. Columns may be rinsed and reused.

MyLab™ Custom Kits Include:

Instructions and materials for 2-3 runs of each experiment!

MyLab™ Custom Kit #1235

Colorimetric DNA/RNA Microarray

Microarrays allows scientists to analyze gene expression of many samples in one assay. This technology has led to cost savings by reducing the sample size, while saving time and yielding accurate results. In this experiment, students explore the biology of cancer by looking at changes in gene expression in simulated patient samples.

MyLab™ Custom Kit #1301

How Clean is Our Home Environment?

- Learn about bacteria and where they are in your home
- Experiment with household cleaners to see which are most effective at killing bacteria
- Understand the relationship between bacteria and cleaning
- Includes petri dishes, agar, filter paper, and transfer pipettes

MyLab™ Custom Kit #1213

How Do We Keep Our Food Safe?

Bacteria grows and multiplies rapidly unless kept in check by good sanitation, food safety, and personal hygiene. Many procedures are routinely used in food safety that include cooking, chilling, cleaning, and avoiding cross-contamination. In this experiment, milk will be used as a growth medium for bacteria. A blue dye will be added that turns colorless when bacteria grow in it. The impact of cooking, chilling, and cross-contamination will be tested to determine bacterial growth.

Don't see what you need? Contact our BioEducation Specialists to discuss CUSTOM CURRICULUM options!

Origami Organelles are downloadable paper models that you print and make as many time as you like! When you purchase a model, you are licensed for *unlimited use* on a single site or campus.

CLICK HERE TO SEE MORE!

NEW

Cat. #EVT-086

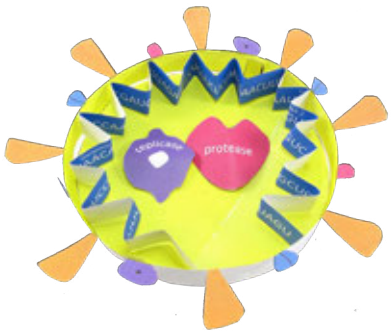
Coronavirus Model

DISTANCE LEARNING

For Any Group Size! Teach the structure and life cycle of the coronavirus with our unique model!

The outbreak of coronavirus (2019-nCoV) highlights the importance of understanding how such viruses infect us and how we can use this understanding to develop vaccines and medicines. Our model of the coronavirus causing coronavirus disease (COVID-19) shows its structure and what the different parts do.

Your students will learn about coronavirus structure and life cycle and provides a good starting point to discuss the challenges that are caused by novel virus strains. It can also be used as an introduction to general virus structure for all levels of students.



Includes:
The viral envelope, RNA genome, spike protein, membrane protein, envelope protein and the enzymes replicase and protease

NEW

Cat. #EVT-031

CRISPR Model

DISTANCE LEARNING

For Any Group Size! Give your students an insight into genome editing!

CRISPR is a revolutionary new genetic engineering technique that makes editing genomes easy and inexpensive. It is based on a type of immune system found in many types of prokaryote. Students first make 3D models of the components of CRISPR - the enzyme Cas9 and guide RNAs. Next, they use these to see how genome editing is done. Making the model and carrying out the activity makes CRISPR easy to understand!

Discover *HUNDREDS* of Origami Organelle Models On Our Website!

Biomedical Sciences • Biotechnologies • Microbiology & Virology • Plant Biology • Environmental Science
Biochemistry • DNA & Genetics • Neurobiology • Anatomy & Physiology • Cells • Bundles

Join Us! YouTube LIVE!

youtube.com/edvotekinc

Watch our current and previous Live Streams on our YouTube page! SUBSCRIBE HERE so you'll never miss out!

You'll Also Find Helpful Tips, Tricks, and Instructional Videos!

NEW The Official Blog for EDVOTEK®

Interested in the biochemistry of hand sanitizer, mastering the ELISA, or DIY test tube racks? The EDVOTEK blog is the perfect place to start! Each week, our scientists cover interesting current events, happenings at EDVOTEK, and essential biotechnology tips! Check in often for new content, contest announcements, and intriguing trivia.

https://blog.edvotek.com/

CUSTOM Curriculum Resources

Meet school year challenges head-on with an **EDVOTEK® Curriculum Specialist**! We can help ease transitions and any curriculum worries.

- Holding labs on alternate days?
- Need a custom group size or specialized components?
- Worried about realistic experiment stopping points?

Email Curriculum@Edvotek.com for expert advice and answers to all your experiment & logistical questions.

NEW EDVOTEK® Online Learning Center

Find lesson plans, presentations, troubleshooting guides, worksheets, and "EDVOTEK At Home" resources all in one place! A wide range of topics, including electrophoresis, PCR, transformation, proteins, ELISA, & forensics are covered.

https://www.edvotek.com/learning-center

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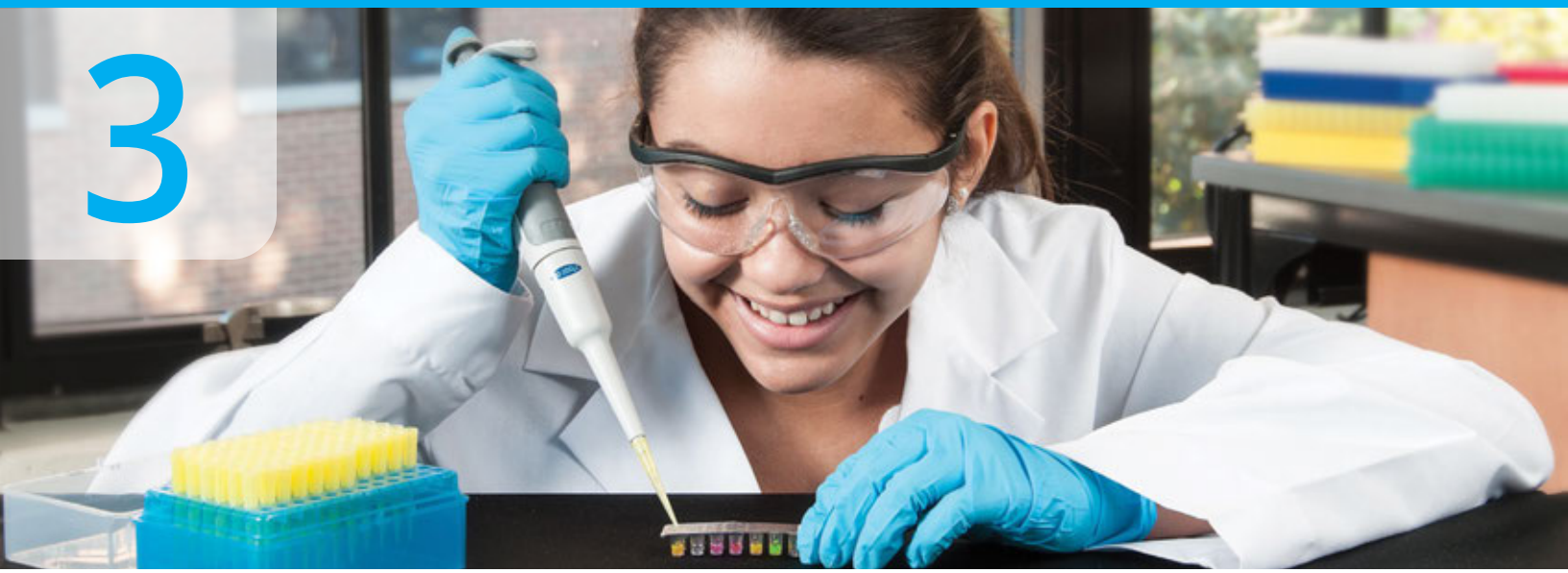
3



Cat. #S-44

Micropipetting Basics

For 10 Lab Groups. Teach your students how to use a micropipette with ease and accuracy by experimenting with multicolored dyes. A fun and cost effective way to learn this important skill.

Kit includes: instructions, various colored dye samples and a Pipet Card™.

All you need: micropipette and tips.

Storage: Room Temperature.

NEW

Cat. #1106

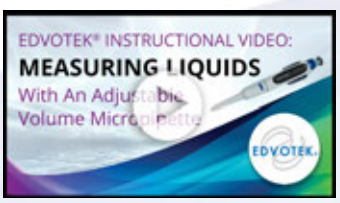
MyLab™ Custom Kit: Micropipetting Basics

DISTANCE LEARNING

For 2-3 runs of the experiment. Are you planning a virtual curriculum or looking for experiments ideal for distance learning? With MyLab™ custom kits from Edvotek, you can plan your curriculum and have all the materials sent directly to your students!

- Learn the critical skill of micropipetting
- Hands-on pipetting practice
- Understand the importance of micropipetting in science
- Includes instructions, fixed volume micropipette, tips, dyes, and pipetting sheet

Check Out Our Related Videos:



NEW

Cat. #S-45

Pipetting By Numbers™ STEAM Pipetting Practice

For 10 Lab Groups. Help your students master the fundamental biotechnology technique of micropipetting while creating a colorful, science-themed classroom poster as well as their own artwork. Students will learn best practices, key parts, and the importance of accuracy & precision and perform a STEAM wet lab based on "paint by numbers".

Kit includes: instructions, test strips, Pipetting By Numbers™ canvas and blank canvases, & microcentrifuge tubes.

All you need: Automatic micropipettes with tips, small containers for discarding used tips, scissors, & tape.

Storage: Room Temperature.

Create a colorful, science-themed classroom poster!

BEST SELLER

Cat. #S-43

DNA DuraGels™

EDVOTEK® exclusive!

DNA DuraGel™ gels are permanent polymer gels that allow students to practice the critically important skill of pipetting/gel loading. The clear, reusable gels are designed for the practice of loading 5-35 µL of samples. Gel models are imprinted with a ruler for sizing DNA fragments. Also included are simulated FlashBlue™ and InstaStain® Ethidium Bromide gel images, ideal for representing how actual gels are stained with Methylene Blue and Ethidium Bromide.

Kit Includes: reusable DNA DuraGels™; FlashBlue™ and InstaStain® Ethidium Bromide gel images, practice gel loading solution and mini-transfer pipets.

All you need: micropipettes are recommended.

Cat # S-43
6 Gels and 8 images (4 FlashBlue™ and 4 InstaStain® Ethidium Bromide gel images)
For 12 to 24 Students

Cat # S-43-20
2 Gels and 4 images (2 FlashBlue™ and 2 InstaStain® Ethidium Bromide gel images)
For 4 Students or Classroom Demo

PERFECT PARTNERS

Cat. #590

EDVOTEK® 5-50 µL Variable Micropipette

CLICK HERE

Cat. #585 thru #588

Fixed Volume MiniPipettes™

CLICK HERE

BIOTECH A–Z

A **Antibody** – an immune protein that allows the body to distinguish between self and non-self.

B **Biotechnology** - the application of living systems or organisms to produce useful products.

C **CRISPR** - a genome editing technology based off of the natural bacterial defense system.

D **DNA** - the molecule that contains an organism's genetic information.

E **Enzyme** - a protein that speeds up a chemical reaction.

F **Forensic Science** - the application of scientific knowledge and methodology to answer legal questions.

G **Green Fluorescent Protein (GFP)** - a jellyfish protein that brightly glows green when exposed to blue light.

H **Hypothesis** - an educated guess based on previous scientific exploration.

I **Ion Exchange Chromatography** - a technique that separates molecules based on their charge.

J **Jumping Gene (or transposon)** a DNA segment that can move to different positions within the genome.

K **Karyotype** - the organization and imaging of a person's chromosomes.

L **Laboratory** - a room or building where scientific experiments are performed.

M **Mitochondria** - the powerhouse of the cell.

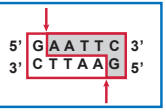
N **Neuron** - a cell that sends and receives messages from the brain.

O **Osmosis** - the movement of solvent across a semipermeable membrane from dilute to concentrated solutions.

P **Plasmid** - small circular pieces of double-stranded DNA that contain extra, non-essential genes.

Q **qPCR (or quantitative PCR)** - a laboratory technique that quantitates the amount of DNA in a sample.

R **Restriction Enzyme** - an enzyme that cuts DNA at a sequence specific location, like a molecular scissor.



S **SDS PAGE** - a technique that separates proteins by molecular weight.

T **Transformation** - the process through which bacteria take up free DNA from the surrounding environment.

U **UV Light** - light with a wavelength between 10 and 400 nm, used to visualize DNA dyes and GFP.

V **Virus** - simple infectious particles that replicate in a host cell.

W **Western Blot** - a laboratory technique that detects specific proteins in a complex mixture.

X **Xanthophyll** - a yellow or brown plant pigment found in plant leaves.

Y **Yield** - the amount of a product recovered from a biochemical purification.

Z **Zymology** - the study of fermentation and how it is used in brewing and food preparation .

Kits In This Section Include The Following*:

Instructions, Ready-to-Load™ QuickStrip™ dye samples, UltraSpec-Agarose™ powder, electrophoresis buffer, practice gel loading solution, disposable pipets.

Unless otherwise stated. Please refer to our website for the current contents, requirements, storage, and time requirements.

What Equipment Do I Need?

Electrophoresis apparatus, power supply, automatic micropipette and tips (optional), white light box (optional), microwave or hot plate, distilled water.

Storage:

Room temperature stable. Storage of Ready-to-Load™ QuickStrip™ samples in the refrigerator is recommended.

These kits require approx. 45 min. to complete.

45 min.

NEW

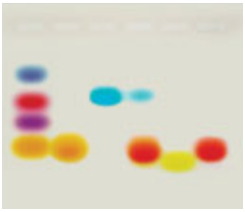
EDVOTEK® Instructional Videos

The following related videos are recommended for this section:

https://www.youtube.com/user/EdvotekInc

Cat. #S-47

Linking Food Science to Biotechnology: Unlock the Color of Candies



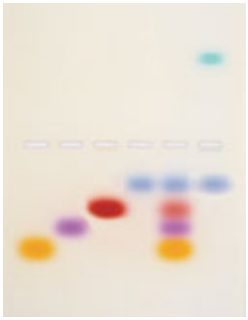
For 10 Gels/10 Lab Groups. Investigate how agarose gel electrophoresis unlocks the color code used by food scientists to make colorful candies. Students will extract colors from common candies and separate the dyes using agarose gel electrophoresis. A fun lab extension involves the use of candy to build a DNA model. ***NOTE: Dye samples are not provided for this experiment. Students will extract their own dyes from colorful candies (not included).***

Check out our related video:

BEST SELLER

Cat. #101

Principles & Practice of Agarose Gel Electrophoresis



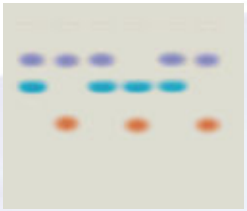
For 8 Gels/8 Lab Groups. Demonstrate to your class how electrophoresis separates molecules on the basis of size and charge. A safe, colorful, fast and simple way to teach a technique that will engage your students.

ALSO Available: *Dye Samples Only in Microtest Tubes For 24 gels* ***Cat. #101-C***

BEST SELLER

Cat. #S-51

Whose DNA Was Left Behind?



For 10 Gels/10 Lab Groups. DNA obtained from 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. *NGSS-aligned with MS-LS3-A.*

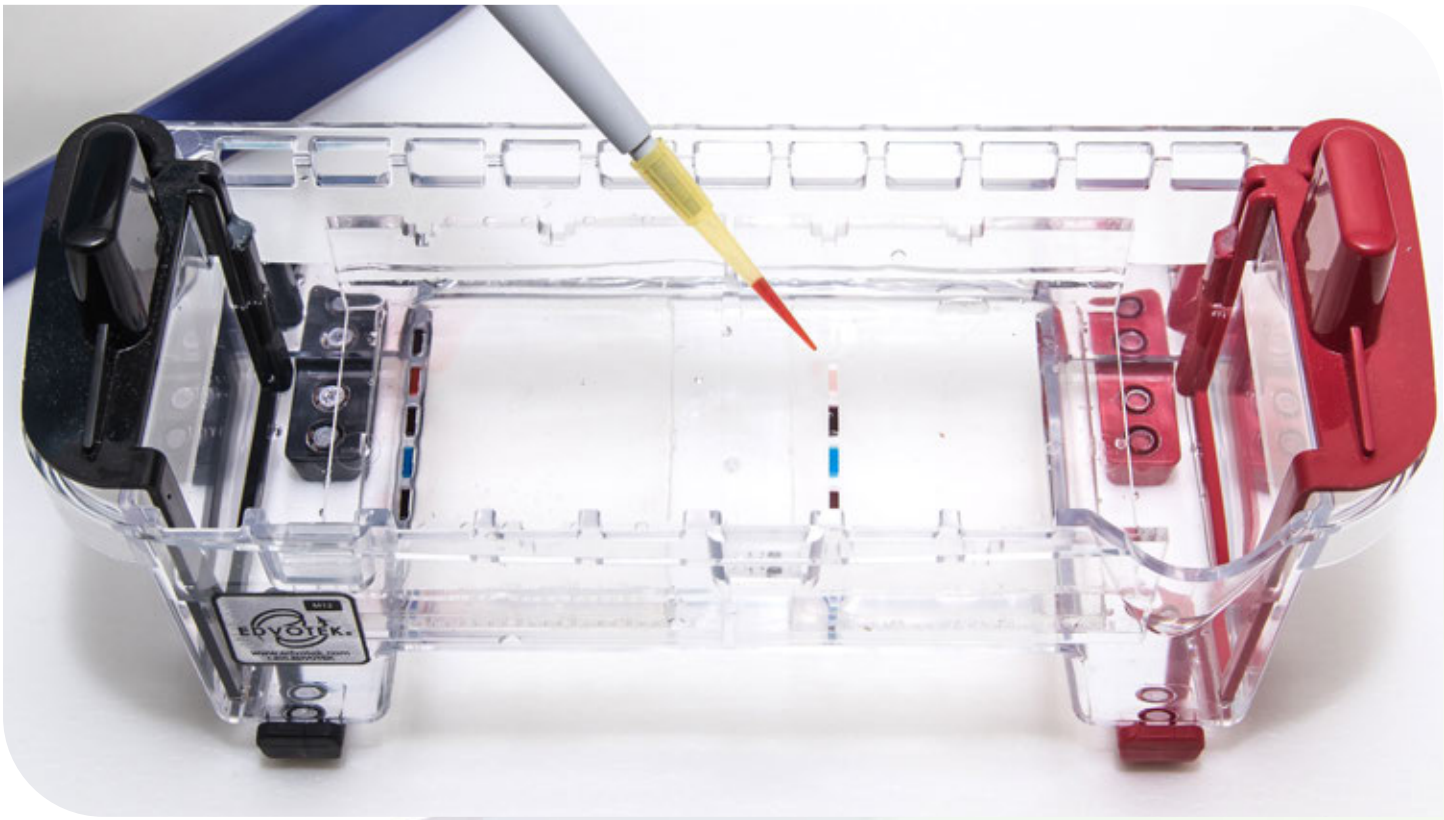
BEST SELLER

Cat. #S-46

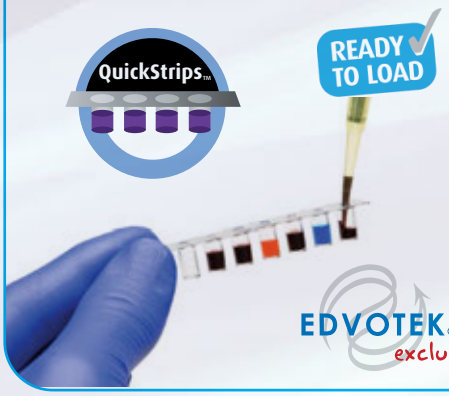
Linking STEM to Agarose Gel Electrophoresis

STEM

For 10 Gels/10 Lab Groups. Link important STEM concepts using Agarose Gel Electrophoresis. Help your students learn about the application of gel electrophoresis in DNA Fingerprinting, DNA Paternity Testing, Genetics (related to health and well-being), or the detection of Genetically Modified Foods. 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.



QuickStrip™ Samples



Conveniently provides the required samples and eliminates the need for prelab teacher sample preparation.

Provided in EDVOTEK® 100 series and "S" series kits at no additional cost!

EDVOTEK® exclusive!

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Visit the Electrophoresis Section of our online Learning Center where you can access many FREE resources:

Lesson Plans, Presentations
Troubleshooting Guides, and MORE!

https://www.edvotek.com/learning-center-electrophoresis

Cat. #S-52

The Secret of the Invisible DNA: A Genetics Exploration

For 10 Gels/10 Lab Groups. 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 (medical diagnostics or alien genetics). Fluorescent dyes simulate DNA fragments, eliminating post-electrophoresis staining and saving you valuable classroom time! *NOTE: A long wave UV light (Cat. #969) or black light and UV safety goggles are required for viewing the fluorescent dyes.*

Cat. #969

Long Wave UV Mini-Light

Cat. #S-49

In Search of My Father

For 10 Gels/10 Lab Groups. 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 it be a happy ending?

BEST SELLER

Cat. #S-50

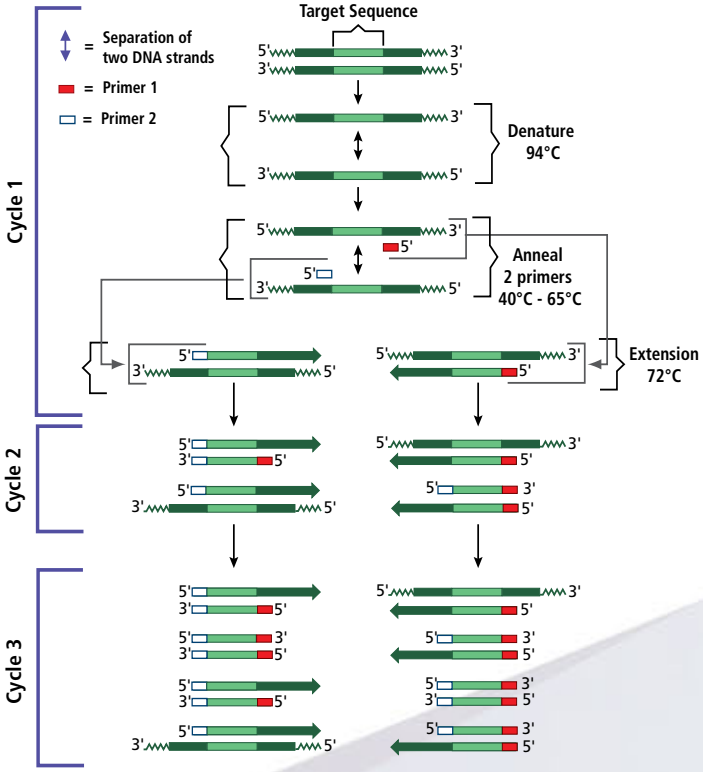
Why Do People Look Different?

For 10 Gels/10 Lab Groups. 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. *NGSS-aligned with MS-LS3-B.*

Cat. #S-48

What is PCR & How Does It Work?

For 10 Gels/10 Lab Groups. This simulation experiment demonstrates the process of DNA amplification by PCR and how the amplified product is detected by separating the reaction mixture by agarose gel electrophoresis. *NGSS-aligned with MS-LS1.*



Cat. #S-53

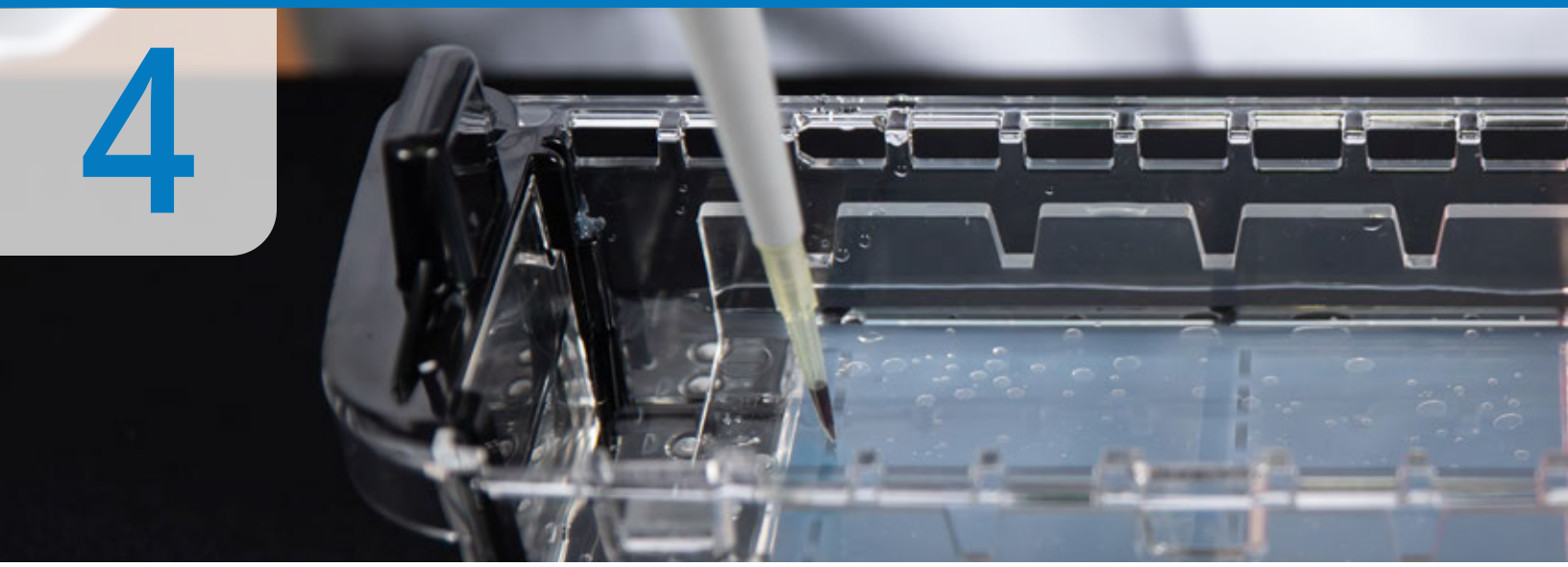
Mystery of the Crooked Cell

For 10 Gels/10 Lab Groups. This simple lab demonstrates detection of the mutation that causes Sickle Cell Anemia. In this simulation, your students will use electrophoresis to separate dyes that represent patient samples and controls.

Developed in Partnership with CityLab Boston University School of Medicine

NIH Department of Health and Human Services • National Institutes of Health Supported by a Science Education Partnership Award (SEPA) from the National Center for Research Resources.

4



What is DNA?

The basic unit of all living organisms, from bacteria to humans, is the cell. Contained within the nucleus of these cells is a molecule called deoxyribonucleic acid (or DNA). Today, we know DNA is the blueprint used to build an organism – our genetic makeup, or genotype, control our phenotype (observable characteristics). The directions coded for by our genes control everything from growth and development to cell specification, neuronal function, and metabolism.

How Was DNA Discovered?

The Swiss physician Friedrich Miescher discovered DNA in 1868, when he purified a novel substance from the nucleus of white blood cells. This molecule, which he called "nuclein", had chemical properties unlike any substance previously identified. By the end of the 19th century, scientists had described DNA as a polymer composed of building blocks known as nucleotides. Most scientists believed that DNA was too simple to comprise the genetic material, so the biological importance of DNA was not realized until much later. (**CLICK HERE** to watch our live stream on *The Discovery of DNA*.)

How Did Scientists Determine DNA Was the Genetic Material?

In 1928, Frederick Griffith observed that living cultures of a normally non-pathogenic strain of *S.pneumonia* were able to kill mice, but only after being mixed with a heat-killed pathogenic strain. Because the non-pathogenic strain had been "transformed" into a pathogenic strain, he named this transfer of virulence "transformation". In 1944, Oswald Avery purified DNA, RNA and protein from the virulent strain of *S.pneumonia* to determine which was responsible for transformation. Only those recipient cells exposed to DNA became pathogenic, leading to the recognition of DNA as the genetic material. These experiments kicked off a worldwide race to unlock the secrets coded for in our DNA.

Kits in this section include the following*:

Instructions, Ready-to-Load™ QuickStrip™ DNA samples, UltraSpec-Agarose™ powder, electrophoresis buffer, FlashBlue™ DNA stain, InstaStain® Blue cards, and disposable pipets.

QuickStrips™ InstaStain® Blue FlashBlue™

All You Need:
Electrophoresis apparatus, power supply, automatic micropipette and tips, microwave or hot plate, distilled water, white light box.

Storage:
Room temperature stable.
Storage of Ready-to-Load QuickStrip™ samples in the refrigerator is recommended.

Time Requirements:
Approximately 45 min.

45 min.

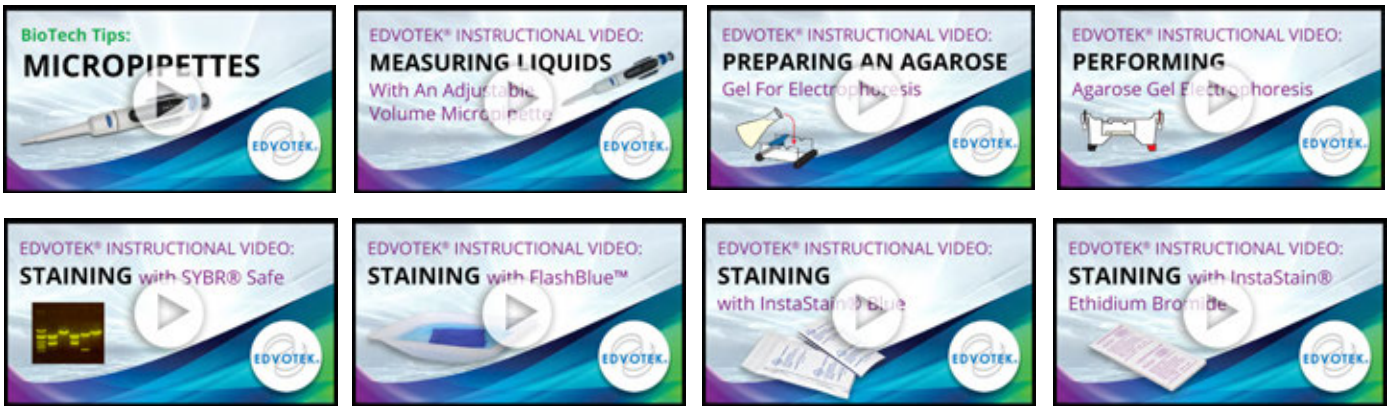
**Unless otherwise stated. Please refer to our website for the current contents, requirements, storage, and time requirements.*

What's in Your 100-Series Kit?

For many years, EDVOTEK® has worked with teachers to make electrophoresis experiments easy to perform in a classroom setting. For example, we have streamlined our pre-lab preparations by providing the Ready-to-Load™ DNA samples as pre-aliquoted Quick-Strips™. The agarose powder and electrophoresis buffer are also supplied in pre-measured quantities, meaning that you just need to dilute, dissolve and go!

NEW EDVOTEK® Instructional Videos

The following related videos are recommended for this section:

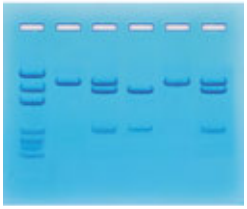


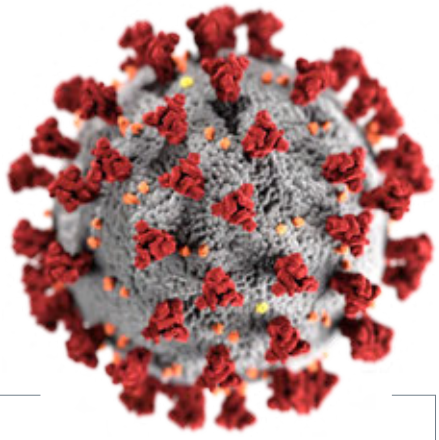
https://www.youtube.com/user/EdvotekInc

NEW

Cat. #123

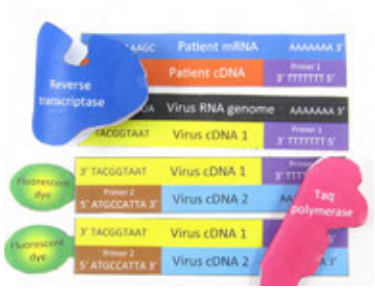
Nucleic Acid Testing for COVID-19





For 8 Gels/8 Lab Groups. SARS-CoV-2 is a novel coronavirus that has caused a worldwide outbreak of respiratory disease beginning in 2019. In this simulated medical test, we will use electrophoresis to detect the presence of the SARS-CoV-2 virus in samples from patients with symptoms of COVID-19.

RELATED PRODUCT



Cat. #EVT-090

Origami Organelles: Coronavirus Nucleic Acid Test Model

Show how the DNA test for the coronavirus (SARS-CoV-2) causing COVID-19 works!

- Our model illustrates how a reverse transcriptase enzyme is first used to convert RNA to DNA.
- See how the real-time PCR test is carried out using a different enzyme called Taq DNA polymerase.
- Fluorescent dyes are used to visualize the result.
- Both positive and negative results are covered by the model.
- The model covers real-time PCR, reverse transcriptase, fluorescent dyes, DNA primers, DNase, and RNase.
- Time to build model takes about 30 minutes.

NEW

Cat. #920

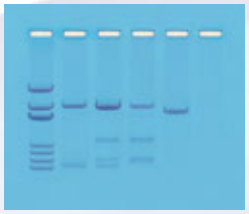
Safari Family Reunion

For 8 Gels/8 Lab Groups. In this lab, students will perform electrophoresis on the DNA samples of two lions in order to return them to wildlife sanctuaries close to their ancestral home.

- Learn how DNA is used to discover an individual's ancestry.
- Perform DNA electrophoresis and RFLP analysis.
- Analyze phylogenetic tree and haplotype maps.
- Explore how conservation biologists use genetic data.

Cat. #114

DNA Paternity Testing Simulation

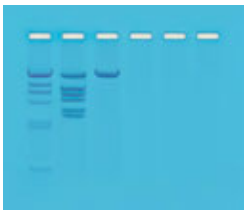


For 8 Gels/8 Lab Groups. This experiment introduces students to the use of DNA fingerprinting in a simulated paternity determination. A child's DNA fingerprint is compared with his parents. The experiment does not contain human DNA.

ALSO Available: DNA Samples Only in Microtest Tubes For 24 gels Cat. #114-C

Cat. #AP09/112

Restriction Enzyme Analysis of DNA



For 8 Gels/8 Lab Groups. This experiment introduces the use of restriction enzymes as a tool to digest DNA at specific nucleotide sequences. Bacteriophage lambda DNA has a linear structure and 6 *Eco* RI recognition sites. Separation by agarose gel electrophoresis of an *Eco* RI digest of lambda DNA will yield 6 bands (5 distinct bands, two are very close in size) corresponding to the DNA fragments.

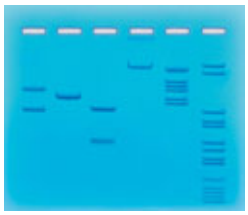
ALSO Available: *DNA Samples Only in Microtest Tubes For 24 gels* Cat. #AP09-C

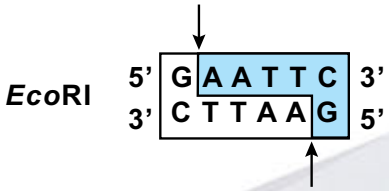
Cat. #102

Restriction Enzyme Cleavage of Plasmid & Lambda DNA

For 8 Gels/8 Lab Groups. Plasmid and lambda DNA are pre-digested with restriction enzymes - endonucleases that recognize and cut double-stranded DNA within or near defined base sequences. Digests are separated by agarose gel electrophoresis.

ALSO Available: *DNA Samples Only in Microtest Tubes For 24 gels* Cat. #102-C



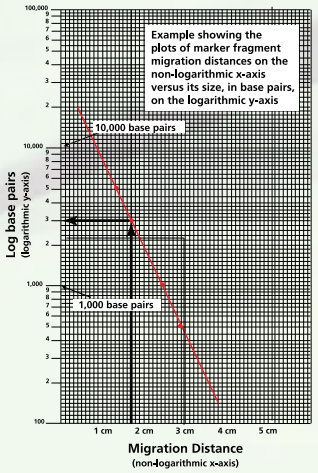


Cat. #105

Mapping of Restriction Sites on Plasmid DNA

For 8 Gels/8 Lab Groups. DNA mapping is a common procedure used to determine the location of genes. In this experiment, DNA markers and pre-digested plasmid DNA fragments are mapped using agarose gel electrophoresis.

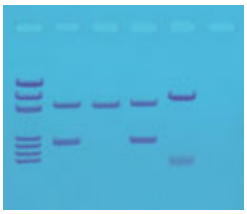
ALSO Available: *DNA Samples Only in Microtest Tubes For 24 gels* Cat. #105-C



Cat. #130

DNA Fingerprinting by PCR Amplification

For 8 Gels/8 Lab Groups. Forensic DNA fingerprinting has become a universally accepted crime-fighting tool. Recent advances use the polymerase chain reaction (PCR) to amplify human DNA obtained from crime scenes. This experiment, based on a crime scene scenario, has an inquiry-based component.



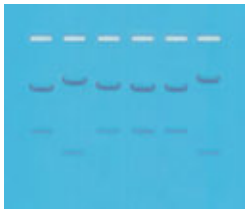
ALSO Available: DNA Samples Only in Microtest Tubes For 24 gels Cat. #130-C

Cat. #109

DNA Fingerprinting by Restriction Enzyme Patterns

For 8 Gels/8 Lab Groups. Basic concepts of DNA fingerprinting are featured in this lab by comparing crime scene DNA with suspect DNAs. Fingerprint patterns are separated by agarose gel electrophoresis and the students determine who may have done-it!

ALSO Available: DNA Samples Only in Microtest Tubes For 24 gels Cat. #109-C



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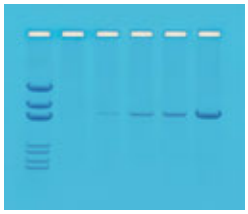
Cat. #103

Principles of PCR



For 8 Gels/8 Lab Groups. Can students explore this Nobel prize winning biotechnology in under an hour and without a thermocycler? Yes! With this simulated PCR experiment, students will perform electrophoresis on PCR samples collected at various time points in a PCR program. The results vividly convey how the Polymerase Chain Reaction begins with a small amount of DNA and by exponentially increasing the amount, the human eye can see it!

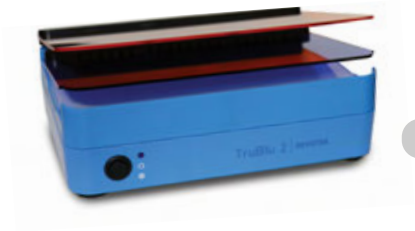
ALSO Available: *DNA Samples Only in Microtest Tubes For 24 gels* Cat. #103-C

RELATED EQUIPMENT

NEW

Cat. #557

TruBlu™ 2 Blue/White Transilluminator



CLICK HERE

NEW

Cat. #500

EDGE™ Integrated Electrophoresis System

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Cat. #5010-Q

QuadraSource™ Power Supply (10-300 V)

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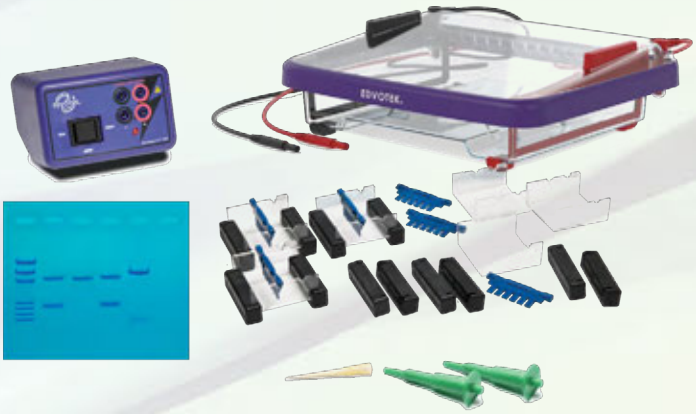
Cat. #5062

Classroom DNA Electrophoresis LabStation™

CLICK HERE



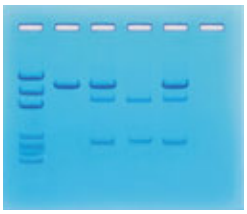
Cat. #591

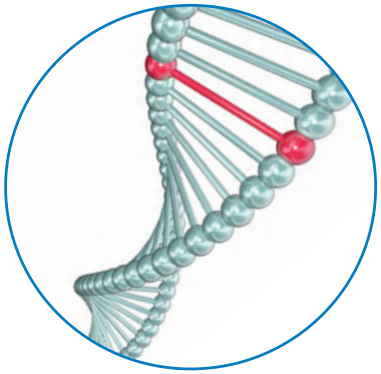
Edvotek® Variable Micropipette (10 - 100 µL)

CLICK HERE

Cat. #115

Cancer Gene Detection





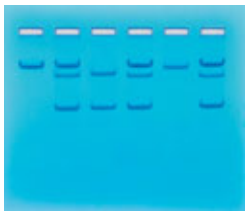
For 8 Gels/8 Lab Groups. Immortality through uncontrolled cell division is a characteristic of cancer cells. The p53 gene is a tumor suppressor gene which prevents this. Mutations in this gene are present in more than 50% of cancers. Testing people for mutations in their p53 gene can indicate an increased risk for developing cancer. These tests raise intriguing ethical questions for both the individual tested and the family of an individual who chooses to be tested. In this experiment, students determine a pedigree for a family suspected to be carriers of mutations in their p53 genes. A DNA test indicates their likelihood of developing cancer.

ALSO Available: DNA Samples Only in Microtest Tubes For 24 gels Cat. #115-C

Cat. #116

Sickle Cell Gene Detection *(DNA-based)*

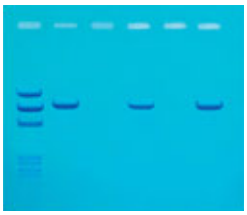
For 8 Gels/8 Lab Groups. Sickle Cell Anemia is a common genetic disease that causes long rods in red blood cells, giving them a "sickled" appearance. These cells get stuck in small capillaries of the blood stream leading to oxygen deprivation that causes pain and organ damage. Sickle Cell Anemia is caused by a single point mutation in the hemoglobin gene that results in a faulty protein. In this experiment, your students will investigate the restriction enzyme that discriminates between HbA (normal) and HbS (disease) genes and perform a simulated test on a patient.



ALSO Available: DNA Samples Only in Microtest Tubes For 24 gels Cat. #116-C

Cat. #117

Detection of Mad Cow Disease



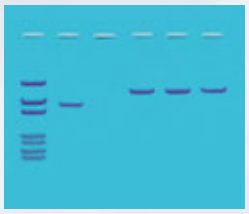
For 8 Gels/8 Lab Groups. Bovine spongiform encephalopathy (BSE), better known as mad cow disease, is a neurodegenerative, fatal condition in cattle. Consuming BSE-infected beef is believed to be the cause of a similar condition in humans, Creutzfeldt-Jakob disease. In this experiment, students examine simulated PCR products from several feed mills, to determine any possible violations of a 1997 ban which ended the practice of including animal parts in cattle feed.

ALSO Available: DNA Samples Only in Microtest Tubes For 24 gels Cat. #117-C

Cat. #124

DNA Screening for Smallpox

For 8 Gels/8 Lab Groups. The objective of this experiment is to develop an understanding of Smallpox and the causative agent of the disease. Students will analyze simulated PCR products to confirm or rule out the presence of the Smallpox virus. **This experiment does NOT contain smallpox.**

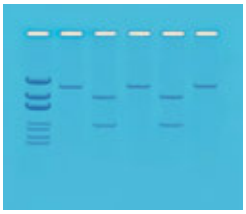


ALSO Available: DNA Samples Only in Microtest Tubes For 24 gels Cat. #124-C

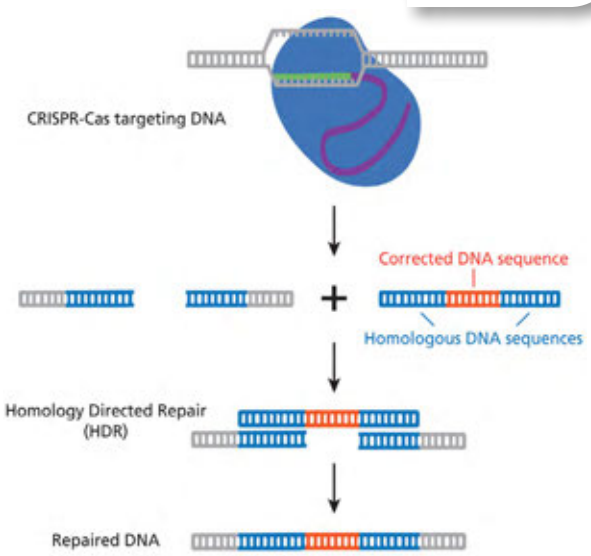
NEW

Cat. #135

Using CRISPR to Treat Cystic Fibrosis



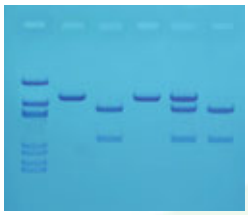
For 8 Gels/8 Lab Groups. In this experiment, students will simulate the use of CRISPR-Cas9 to target a genetic mutation found in a patient suffering from Cystic Fibrosis. Students will develop an understanding of guide RNA (gRNA) design, and use agarose gel electrophoresis to examine pre-prepared DNA samples after CRISPR treatment.



BEST SELLER

Cat. #118

Cholesterol Diagnostics



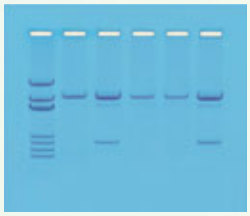
For 8 Gels/8 Lab Groups. Elevated blood cholesterol has been established as a serious risk factor for coronary heart disease and stroke which are leading causes of death in the United States. A disease known as familial hypercholesterolemia (FH) causes an increase in blood levels of the "bad" form of cholesterol, known as low density lipoprotein (LDL). In this electrophoresis experiment, a simulated genetic test for hypercholesterolemia is demonstrated in which patients are tested for a DNA polymorphism linked to the FH gene.

ALSO Available: DNA Samples Only in Microtest Tubes For 24 gels Cat. #118-C

Cat. #121

Detection of Genetically Modified Organisms

AP ENVIRONMENTAL



For 8 Gels/8 Lab Groups. For centuries, humans have used selective breeding and conventional hybridization to produce desirable qualities and to increase crop yields. Today, scientists use genetic engineering to directly manipulate the DNA, quickly producing these desirable traits. In this experiment, students will use agarose gel electrophoresis to explore the molecular methods used by scientists to identify genetically modified organisms. No thermal cycler is required. Students are also encouraged to explore the controversy surrounding the use of genetically modified organisms.

ALSO Available: DNA Samples Only in Microtest Tubes For 24 gels Cat. #121-C

Cat. #120

Ready-to-Load™ DNA Sequencing

For 8 Gels/8 Lab Groups. Introduce your students to the exciting science of DNA Sequencing. This kit contains the four Ready-to-Load sequenced DNAs (nucleotides A, C, G, & T) in an easy to use, safe format. Students load the four separate reactions into agarose gels, run the gels, stain them, and actually read the DNA sequence. This experiment can be used to introduce genome concepts and help your students gain a better understanding of the science behind DNA sequencing.

5

What Are Restriction Enzymes?

Restriction endonucleases (also known as restriction enzymes) act like molecular scissors, cutting double-stranded DNA at specific sequences. They are produced by many species of bacteria to protect themselves from invading viral DNA. The utility of restriction enzymes has made molecular cloning, DNA mapping, sequencing and various genome-wide studies possible.

How Do They Know Where to Cut DNA?

In general, restriction enzymes recognize palindromic stretches of DNA that are 4-8 base pairs in length. The restriction enzyme cuts through both strands of DNA, creating fragments with one of two types of DNA ends -- "blunt" or "sticky" (Figure 1). Enzymes like *Hae*III cleave through both DNA strands at the same position, which generates fragments without an overhang. These so-called "blunt" ends can be joined with any other blunt end without regard for complementarity. In contrast, enzymes like *Eco*RI cut through the DNA strands at staggered positions, creating short overhangs of single-stranded DNA. Such overhangs are referred to as "sticky" ends because the single strands can interact with—or stick to—other overhangs with a complementary sequence.

How Many Times Can a Restriction Enzyme Cut a Piece of DNA?

The probability that a given enzyme will cut, or "digest", a piece of DNA is directly proportional to the length of its recognition site. Statistically, an enzyme will average one cut for every 4^n base pairs, where n is the length of the recognition site. Therefore, the longer a DNA molecule is, the greater the probability is that it contains one or more restriction sites. For instance, an enzyme that recognizes six base pairs (e.g., *Eco*RI) will cut once every 4,096 (or 4^6) base pairs. If *Eco*RI is used to digest both human chromosomal DNA and a plasmid, it will cut the chromosomal DNA over 700,000 times (3 billion base pairs, cut every 4,096 base pairs), but may only cut the plasmid once (5,000 base pairs, cut every 4096 base pairs).

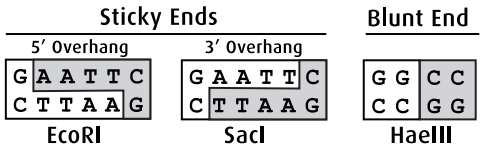


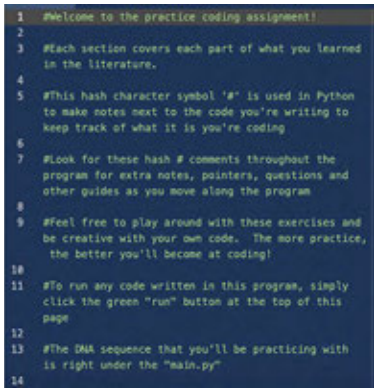
Figure 1: Different Types of DNA Ends Produced by Restriction Enzymes.

NEW

Cat. #342

Learn to Code! Introduction to Python for Detecting Disease

DISTANCE LEARNING

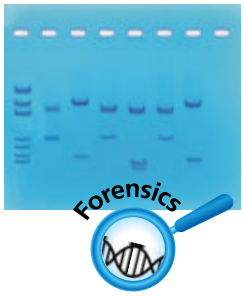


For Any Group Size! Bioinformatics is a field dedicated to biological data analysis; an interface between computers and human health. Scientists use powerful computers to create simulations of biological activity and process large data sets, making large and complex data sets easy to understand and analyze. In this experiment, students will learn how bioinformaticians process gene data, how they make sense of gene behavior, and what happens genotypically when a mutation occurs in a DNA sequence. First, students will be introduced to the basics of the coding language Python, and will then use these skills to identify a SNP in a simulated patient's DNA. No previous knowledge of coding necessary. *All you need is a computer with internet access!*

BEST SELLER

Cat. #225

DNA Fingerprinting Using Restriction Enzymes



For 6 Gels. Teach your students about restriction enzyme digests in the context of forensic science! Your students will cut DNA with restriction enzymes and then compare the banding pattern of the crime scene DNA versus that of two suspects using agarose gel electrophoresis.

Complete in 1 hour and 20-45 min.

Storage: Some Components Require Freezer Storage Upon Receipt.

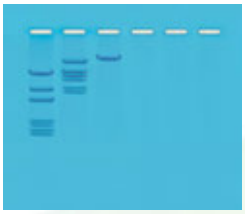
CLICK HERE **For Experiment #225 Components and Requirements.**

No Ice Shipment Dryzymes®

Cat. #212

Cleavage of Lambda DNA with *Eco*RI Restriction Enzyme

AP Biology Investigation #9 Option



For 10 Restriction Digestions and 5 Gels. The DNA from bacteriophage lambda is a well-characterized linear molecule containing six recognition sites for *Eco*RI (generating 5 fragments with distinct sizes and 2 fragments that are very close in size). In this experiment, Lambda DNA is digested by the *Eco*RI endonuclease. The digestion products are analyzed by electrophoresis.

Complete in 90 min.

Storage: Some Components Require Freezer Storage Upon Receipt.

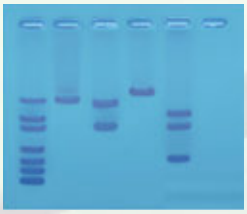
CLICK HERE **For Experiment #212 Components and Requirements.**

No Ice Shipment Dryzymes®

Cat. #206

Restriction Enzyme Mapping

Newly Updated!



For 6 Sets of Restriction Digestions. In this experiment, a plasmid DNA is cleaved with different combinations of restriction enzymes. By determining the fragment size and using agarose gel electrophoresis, the relative positions of the restriction sites can be mapped.

Complete in 1 hour and 20-45 min.

Storage: Some Components Require Freezer Storage Upon Receipt.

CLICK HERE **For Experiment #206 Components and Requirements.**

No Ice Shipment Dryzymes®

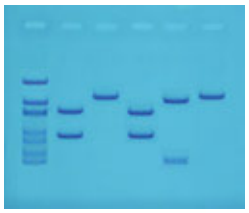
No Ice Shipment Dryzymes®

No Overnight Wet Ice Shipping Required!

NEW

Cat. #210

A-maize-ing Editing: Using CRISPR to Improve Crops



For 8 Gels. Explore cutting-edge biotechnology with this hands-on CRISPR-Cas9 simulation. Students will assume the role of plant geneticists working to develop corn crops capable of surviving, and thriving, in a changing environment. This experiment will allow students to develop an understanding of CRISPR-Cas9 applications in the laboratory, cleave DNA, and examine their results after gel electrophoresis.

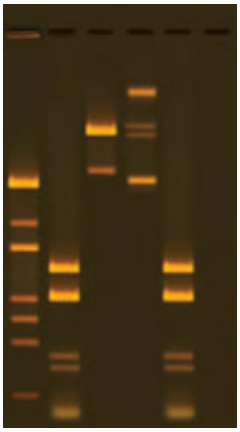
Complete in 1.5 hours.

Storage: Some Components Require Freezer Storage Upon Receipt.

CLICK HERE For Experiment #210 Components and Requirements.

Cat. #205

Analysis of DNA Methylation Using Restriction Enzymes



For 6 Groups. In this experiment, students explore the effects of DNA methylation on restriction enzyme activity. Plasmid DNA will be digested with the restriction enzymes *Dpn*I and *Dpn*II. When digested with these enzymes, methylated and unmethylated DNA will produce restriction fragments that are distinct from one another. The restriction fragments are then analyzed using agarose gel electrophoresis. After visualizing the gel, students determine which sample is methylated. ***Requires wet ice shipment for next day delivery (by 3:00 p.m. in most areas.)***

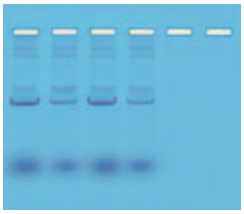
Complete in 2 hours and 30 min.

Storage: Some Components Require Freezer Storage Upon Receipt.

CLICK HERE For Experiment #205 Components and Requirements.

Cat. #202

Mini-Prep Isolation of Plasmid DNA



For up to 20 plasmid isolations for twelve 7x7 cm gels. Small-scale rapid isolation of plasmid DNA is a routine procedure used for screening and analysis of recombinant DNAs in cloning and subcloning experiments. In this experiment, students isolate plasmid DNA without the use of toxic chemicals such as phenol or chloroform.

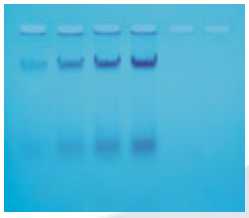
Isolation of Plasmid DNA 60 min.
Electrophoresis 45 min.

Storage: Some Components Require Freezer Storage Upon Receipt.

CLICK HERE For Experiment #202 Components and Requirements.

Cat. #203

Isolation of *E.coli* Chromosomal DNA



For up to 20 DNA isolations and 5 gels. Isolation of high molecular weight chromosomal DNA is the first step in molecular cloning since it is the source of genes in cells. This experiment provides DNA Extraction LyphoCells™ and reagents for isolating chromosomal DNA from *E. coli.* After spooling from solution, the DNA can be dissolved and analyzed by agarose gel electrophoresis as an optional lab extension activity.

Complete in 1 hour and 45 min.

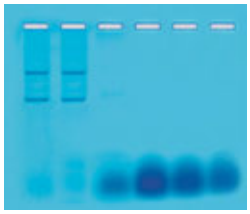
Storage: Room Temperature.

CLICK HERE For Experiment #203 Components and Requirements.

Cat. #204

Separation of RNA and DNA by Gel Filtration Chromatography

For 5 Separations and 5 Gels. Gel filtration chromatography separates molecules on the basis of size and shape. This experiment provides a LyphoSample™ mixture of RNA and DNA that is separated on a gel exclusion column. The purified fractions of DNA and RNA are analyzed by agarose gel electrophoresis.



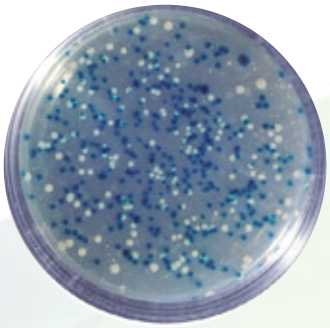
Complete in 90 min.

Storage: Refrigerator.

CLICK HERE **For Experiment #204 Components and Requirements.**

Cat. #300

Blue/White Cloning of a DNA Fragment & Assay of ß-galactosidase



For 5 Groups. When DNA is subcloned in the pUC polylinker region, ß-galactosidase production is interrupted, resulting in the inability of cells to break down X-Gal. This results in the production of white colonies amongst a background of blue colonies. This experiment provides a DNA fragment together with a linear plasmid and T4 DNA Ligase. Following the ligation to synthesize the recombinant plasmid, competent *E. coli* cells are transformed and the number of recombinant antibiotic resistant white and blue colonies are counted. ß-galactosidase activity is assayed from blue and white bacterial cells. This experiment can be broken down into three modules: ligation, transformation, and assay of ß-galactosidase.

Complete in 3 one-hour periods.

Storage: Some Components Require Refrigerator & Freezer Storage Upon Receipt.

CLICK HERE **For Experiment #300 Components and Requirements.**

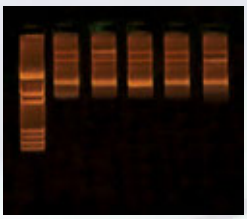
Cat. #300 is recommended for college level courses.

NEW

Cat. #957

Blinded by the Light: UV Rays and DNA Damage

For 10 Groups. In this experiment, students directly observe the effects of UV light on DNA. Students will run a time series test comparing UV exposed plasmid samples and examine their results using electrophoresis. Students may also test the ability of different sunscreens to prevent DNA damage.



Complete in 2 hours.

Storage: Some Components Require Freezer Storage Upon Receipt.

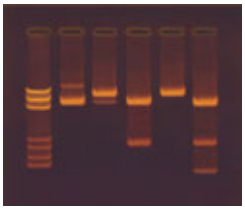
CLICK HERE **For Experiment #957 Components and Requirements.**

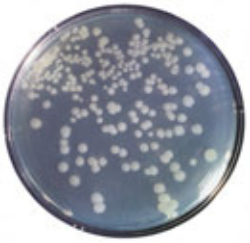
BEST SELLER

Cat. #301

Construction and Cloning of a DNA Recombinant

Newly Updated!





For 5 Plasmid Constructs & Analyses. Cloning is frequently performed to study gene structure and function, and to enhance gene expression. This experiment is divided into five modules. Clones are constructed by ligation of a vector and a fragment insert. The constructs are then transformed into competent cells and the cells are grown and selected for resistance. Plasmid DNA is then isolated from the transformants, cleaved with restriction enzymes, and analyzed by agarose gel electrophoresis.

Complete in 5 modules in approx. 5 hours of class time.

Storage: Some Components Require Refrigerator & Freezer Storage Upon Receipt.

CLICK HERE For Experiment #301 Components and Requirements.

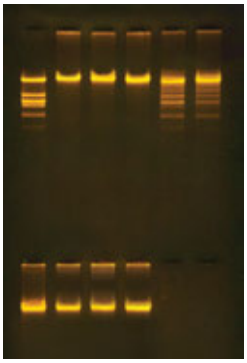
Cat. #301 and Cat. #302 are recommended for college level courses.

Cat. #302

Purification of the Restriction Enzyme *Eco*RI

Newly Updated!

STEM



For 5 Purifications. In this experiment, students actually purify the restriction enzyme, *Eco*RI! This procedure utilizes an ion exchange chromatography step for *Eco*RI purification. Column fractions are assayed for the enzyme using Lambda DNA and digestion products are identified by agarose gel electrophoresis. Fractions that contain *Eco*RI are identified and pooled. The total and specific activities are calculated. Recommended for college level courses.

Storage: Some Components Require Freezer Storage Upon Receipt.

CLICK HERE For Experiment #302 Components and Requirements.

Packing column 45 min.
Restriction Analysis A 35 min.
Restriction Analysis B 50 min.
Gel Prep 30 min.
Electrophoresis 30 min.
Staining 2 min.

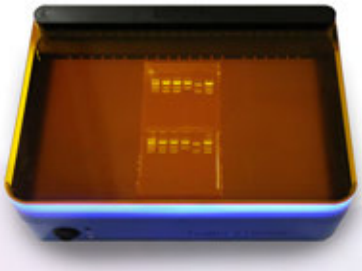
RELATED EQUIPMENT

NEW

Cat. #557

TruBlu™ 2 Blue/White Transilluminator

Designed to visualize SYBR® Safe or blue stained gels.



MORE INFO

Cat. #558

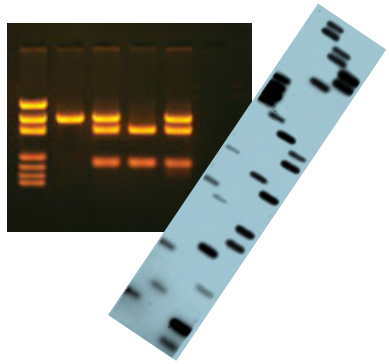
Midrange UV Transilluminator

Designed to visualize ethidium bromide or SYBR® Safe stained gels.

MORE INFO

Cat. #314

In Search of the Cancer Gene



For 6 Groups. Suppressor genes such as p53 are essential for cell functions. Mutations in the p53 gene can be correlated to predisposition for certain cancers. Mutations in genes can either be inherited or accumulated due to environmental insults. This experiment deals with a family pedigree determination of several generations relating to cancer formation due to p53 gene mutation. This experiment does not contain human DNA.

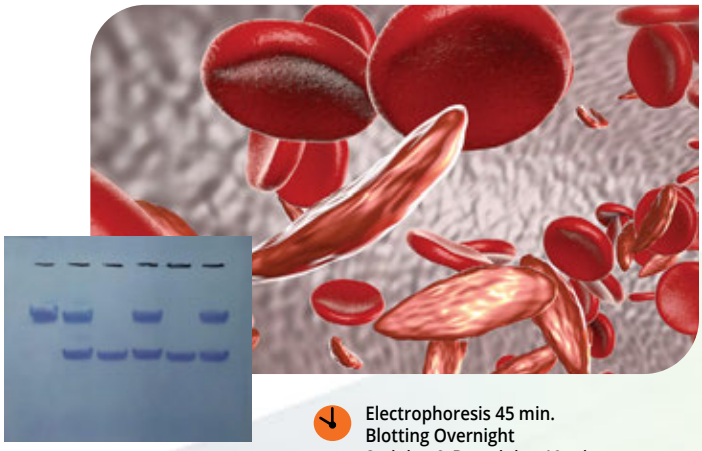
Complete in 60 min.

Storage: Refrigerator.

CLICK HERE For Experiment #314 Components and Requirements.

Cat. #315

In Search of the Sickle Cell Gene by Southern Blot



For 5 Groups. Southern blotting is an important technique used widely in clinical genetics and research. By transferring DNA from an agarose gel onto a membrane, the method allows you to analyze and identify the DNA bands on a gel precisely. Your students will use Southern blotting to find a point mutation in the hemoglobin gene indicating Sickle Cell Anemia.

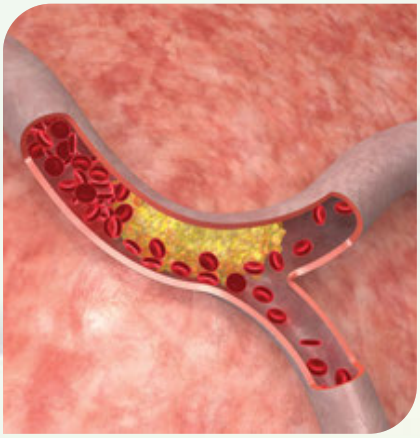
Storage: Some Components Require Refrigerator & Freezer Storage Upon Receipt.

CLICK HERE For Experiment #315 Components and Requirements.

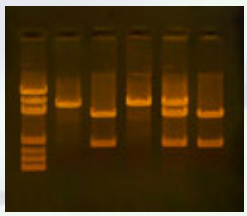
Electrophoresis 45 min.
Blotting Overnight
Staining & Destaining 10 min.

Cat. #316

In Search of the Cholesterol Gene



For 10 Groups. Coronary heart disease and stroke are major causes of death in the Western world. Elevated blood cholesterol levels are a serious risk factor for both conditions. The genetic disease familial hypercholesterolemia (FH) causes an increase in blood levels of the "bad" form of cholesterol, low density lipoprotein (LDL). This experiment includes reagents for the colorimetric enzymatic reaction which is the basis of the clinical cholesterol test. In addition, students will analyze a simulated genetic screening for a disease using agarose gel electrophoresis.



Complete in 2 hours and 15 min.

Storage: Some Components Require Refrigerator & Freezer Storage Upon Receipt.

CLICK HERE For Experiment #316 Components and Requirements.

Cat. #311

DNA Fingerprinting by Southern Blot

Advanced Topic

Electrophoresis 45 min.
Blotting Overnight
Non-Isotopic Detection 3-4 hours.

For 5 Groups. In this experiment, students gain experience in non-isotopic DNA detection & the use of Southern Blot analysis in DNA fingerprinting for a hypothetical paternity test. Includes three modules: agarose gel electrophoresis, Southern Blot transfer, and non-isotopic detection of DNA. *Requires wet ice shipment for next day delivery (by 3:00 p.m. in most areas).*

Storage: Some Components Require Refrigerator & Freezer Storage Upon Receipt.

CLICK HERE **For Experiment #311 Components and Requirements.**

Cat. #311 is recommended for college level courses.

Cat. #339

Sequencing the Human Microbiome

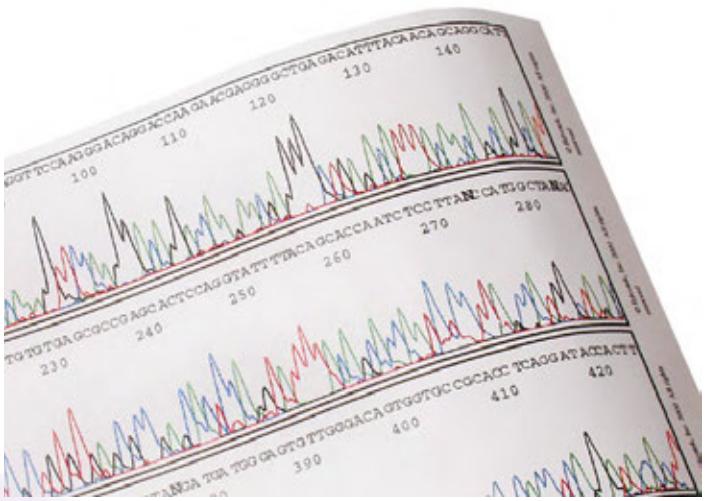
Newly Updated!

Sequences For 10 Groups. Humans live in a delicate balance with the microorganisms that live in and on their bodies. If this balance is disrupted, harmful bacteria can multiply and cause disease. In this experiment, students will read DNA sequences obtained from automated DNA sequencing techniques. The data will be analyzed using publicly available databases to identify the bacterial species present in a patient sample. The results will be used to make a diagnosis.

Kit includes: instructions, automated sequencing printouts.

All you need: computer access to the internet.

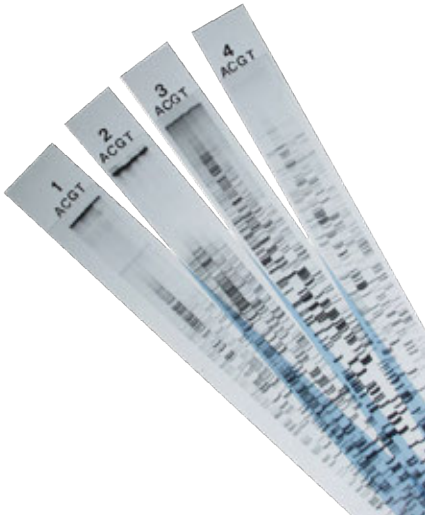
45 min.



Cat. #340

DNA Bioinformatics

45 min.



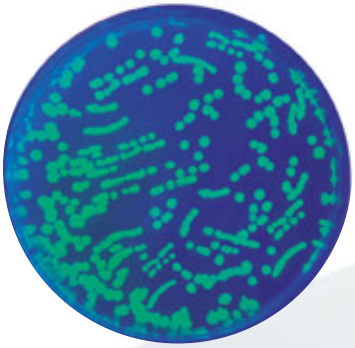
For 12 Groups. DNA sequence information is being compiled by various genome initiatives and numerous research groups around the world. The management of this data is known as bioinformatics. This information is stored in various DNA sequence databases which can be readily accessed via the internet. In this experiment, students read autoradiographs containing DNA sequences which represent segments of important cellular genes. Using bioinformatics databases, students compare and extrapolate database information and identify the gene product.

Kit includes: instructions, 3 sets of 4 autoradiograms.

All you need: white light visualization system, computer access to the internet.

Cat. #303

Exploring Biotechnology with GFP



For 6 experiments with 4 modules each. Four experimental modules are combined into one experiment to provide a comprehensive biotechnology exploration focusing on the green fluorescent protein (GFP). Bacterial cells are transformed to express the green fluorescent protein (GFP). The transformed cells are then grown and the GFP is purified by column chromatography. Finally, the purity of the protein fractions are analyzed by SDS polyacrylamide electrophoresis.

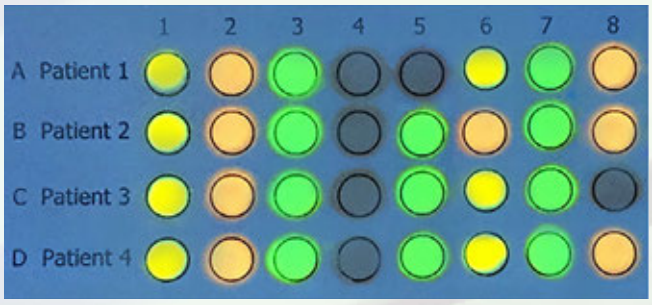
Complete in 3 hours and 15 min.

Storage: Some Components Require Freezer Storage Upon Receipt.

CLICK HERE **For Experiment #303 Components and Requirements.**

Cat. #235

DNA/RNA Microarrays



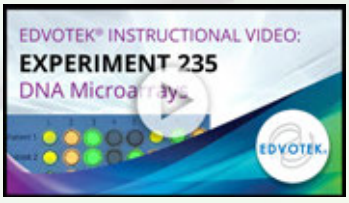
For 10 lab groups. Membrane microarray technology is enabling scientists to screen large numbers of samples in one assay. This technology has led to cost savings by reducing the sample size, while saving time and yielding accurate results. Students will apply simulated DNA and RNA samples to a membrane to screen for positive and negative samples.

Complete in 60 min.

Storage: Refrigerator.

CLICK HERE **For Experiment #235 Components and Requirements.**

Check Out Our Related Video:



6

Nobel Prize Winning Science in Your Classroom!

The invention of the Polymerase Chain Reaction (PCR) radically changed biology. The technique was considered so important that the Nobel Prize was awarded to its inventor, Dr. Kary Mullis, in 1993.

Thanks to this technique, very small samples of DNA (from as little as a single cell) can be analyzed. PCR works by making billions of copies of DNA in just a few hours. PCR is now routinely used in forensic investigations, infectious disease testing and screening for genetic disease.

In this section, you will find kits to teach PCR to suit all student abilities and all budgets. With our Ready-to-Load™ kits, you can demonstrate the concept of PCR without using a thermal cycler! Your students can even try amplifying their own DNA.

We have also re-designed our EdvoCycler™ and introduced the EdvoCycler™ Jr, affordable PCR machines for the classroom! Give your students the opportunity to perform this Nobel Prize winning technique!

RELATED EQUIPMENT

Cat. #540

EdvoCycler™ Jr.

At 16 wells, the EdvoCycler™ Jr. has the largest capacity of any personal PCR machine. It offers superior performance in a sleek form factor with a vivid touchscreen display. Proudly made in the USA and backed by a 3 year warranty!

Cat. #541-542

EdvoCycler™ 2

The EdvoCycler™ 2 doubles the capacity of the original at 48 wells and features an intuitive color touchscreen. Proves to be the best value among classroom thermal cyclers. Proudly made in the USA and backed by a 3 year warranty!

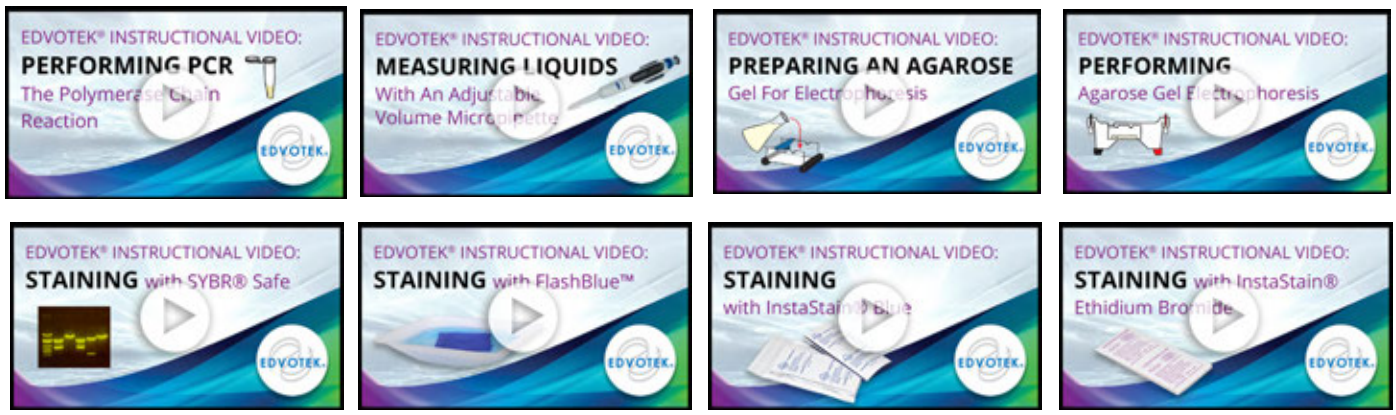
NEW Cat. #540
EdvoCycler™ Jr
CLICK HERE

NEW Cat. #541-542
EdvoCycler™ 2
CLICK HERE

NEW

EDVOTEK® Instructional Videos

The following related videos are recommended for this section:



https://www.youtube.com/user/EdvotekInc

Kits in this section include the following:

Instructions, PCR EdvoBeads™, control DNA and primers, microtubes, agarose, DNA ladder, buffer, and SYBR® Safe Stain.

All You Need:

Micropipettes to measure between 5 and 50 µL, tips, water bath, thermal cycler, electrophoresis apparatus, power supply, microwave or hot plate, UV or blue light transilluminator.

Storage:

Some components require freezer storage upon receipt.

NEW

Cat. #EVT-032

Polymerase Chain Reaction (PCR) Model

For Any Group Size! Teach PCR in a completely new way!

Help your students to understand PCR with this colorful model. Students make models of *Taq* DNA polymerase and use it to extend primers on template DNA. They can carry out as many cycles as they like with the components provided.

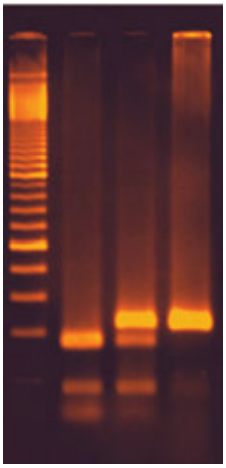
They learn about the importance of *Taq* polymerase, that DNA is only synthesized in the 5' to 3' direction, DNA primers, the steps of PCR - denaturing, annealing and extension. Compare PCR and DNA replication using our DNA replication model.

Origami Organelles are downloadable paper models that you print and make as many times as you like! When you purchase a model, you are licensed for unlimited use on a single site or campus.

Discover *HUNDREDS* of Origami Organelle Models On Our Website!

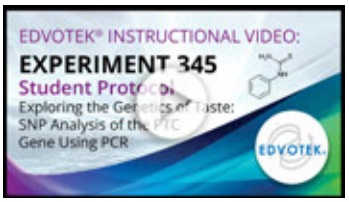
Cat. #345

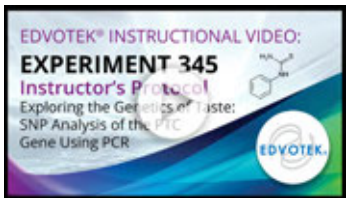
Exploring the Genetics of Taste: SNP Analysis of the PTC Gene Using PCR



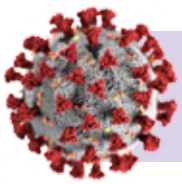
For 25 Reactions. The objective of this experiment is to identify the presence of the single nucleotide polymorphism (SNP) in an amplified segment of the PTC gene that links detection of the characteristic taste of PTC paper. This is a set of five modules that starts with (I) extraction of DNA from buccal cells (II) amplifying the segment that contains the polymorphic nucleotide (III) digestion of the amplified fragment with the restriction enzyme that recognizes the SNP (IV) analysis by gel electrophoresis (V) tasting the PTC paper to confirm the results obtained.

Check Out Our Related Videos for Cat. #345:





Extraction 30 min.
PCR Set Up 10 min.
PCR 2 hrs.
DNA Digest 60 min.
Electrophoresis 30 min.
Staining 5 min.

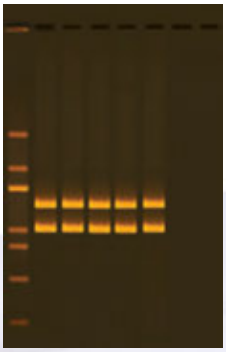


CLICK HERE to discover our COVID-19 Experiments and Resources.

Cat. #332

The Mother of All Experiments: Exploring Human Origin by PCR Amplification of Mitochondrial DNA

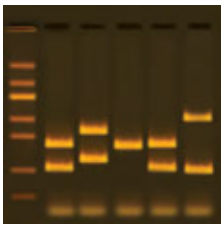
For 25 Students. In this experiment, students will isolate their mitochondrial DNA and use the Polymerase Chain Reaction (PCR) to amplify two separate regions of the mitochondrial genome. Results are analyzed using agarose gel electrophoresis.



Extraction 50 min.
PCR Set Up 10 min.
PCR 2 hrs.
Electrophoresis 60 min.
Staining 5 min. to overnight

Cat. #334

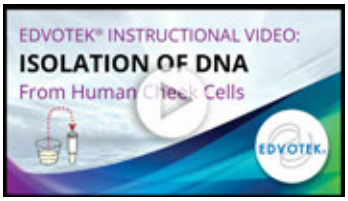
VNTR Human DNA Typing Using PCR



For 25 Students. In DNA fingerprinting, variable number tandem repeats (VNTR) are used to identify individuals. In this kit, students will type themselves at the D1S80 locus on chromosome 1. This region contains between 14 and 40 copies of a 16 base pair repeat.

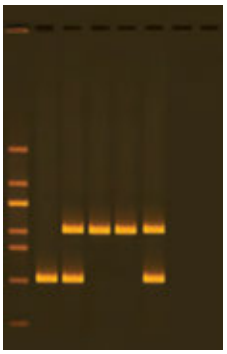
Extraction 30 min.
PCR Set Up 10 min.
PCR 90 min.
Electrophoresis 30 min.
Staining 5 min.

Check Out Our Related Video:



Cat. #333

Alu Human DNA Typing Using PCR



For 25 Students. Your students use primers for a 300 base pair Alu insertion in chromosome 16 (PV92) to determine their own genotype! They can then compare their class results with others around the world over the internet.

Extraction 50 min.
PCR Set Up 10 min.
PCR 90 min.
Electrophoresis 60 min.
Staining 5 min. to overnight

Cat. #369

Human PCR Tool Box™

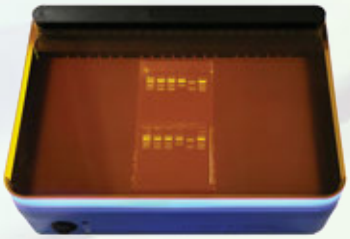
For 25 Students. Carry out three PCR experiments in your class at once! This kit provides three sets of primers to carry out the PCR amplification of Alu element (PV92) on chromosome 16, the VNTR locus (D1S80) on chromosome 1, and two regions of the mitochondrial gene. For 6 runs of each PCR reaction.

Extraction 50 min.
PCR Set Up 10 min.
PCR 2 hrs.
Electrophoresis 60 min.
Staining 5 min. to overnight

RELATED EQUIPMENT

Cat. #557

TruBlu™ 2 Blue/White Transilluminator

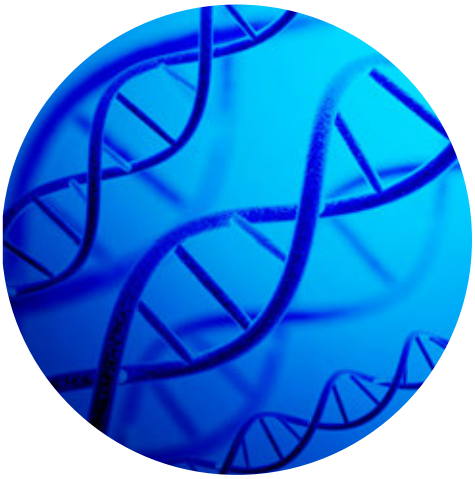


CLICK HERE

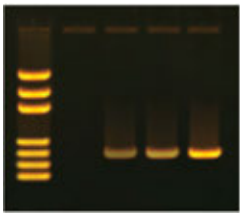
BEST SELLER

Cat. #330

PCR Amplification of DNA



For 10 Groups. In this easy PCR experiment, students will make billions of copies of a small amount of DNA in just 90 minutes! They will just need to mix template DNA & primers with PCR beads that contain all of the other components required to carry out a PCR reaction. Students will see the increasing amounts of DNA for themselves, taking samples every few cycles and analyzing them on a DNA gel.



PCR Set Up 10 min.
PCR 90 min.
Electrophoresis 30 min.
Staining 5 min. to overnight

BEST SELLER

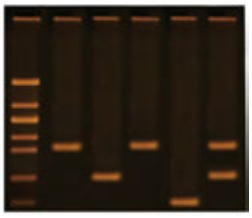
Cat. #371

DNA Fingerprinting Using PCR

Forensics

Advanced Topic

For 25 students working in 5 groups. Give your students the opportunity to carry out PCR in the classroom! This kit provides easy to follow instructions for your students to develop various crime scene scenarios independently. Plasmid DNA, when amplified by PCR, provides products that represent individual DNA profiles. Your students can then solve a crime!

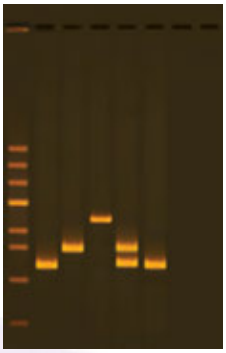


PCR Set Up 10 min.
PCR 2 hrs.
Electrophoresis 60 min.
Staining 5 min. to overnight

Cat. #953

Multiplex PCR Testing of Water Contaminants

AP ENVIRONMENTAL



For 25 Students. Drinking water is routinely tested for contamination. If a screening tests positive, more sophisticated tests are required. One such test uses PCR in multiplex format. In this experiment, students will test for the presence of three separate, classroom-safe organisms in a water sample using a single PCR reaction.

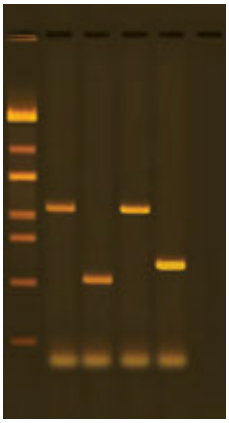
Extraction 60 min.
PCR Set Up 10 min.
PCR 2 hrs.
Electrophoresis 60 min.
Staining 5 min. to overnight

NIH

BactoBeads™

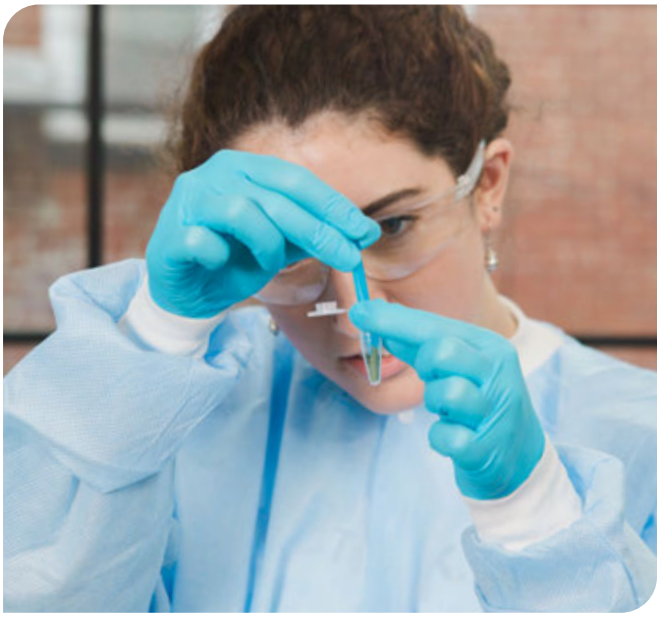
Cat. #338

Exploring Plant Diversity with DNA Barcoding



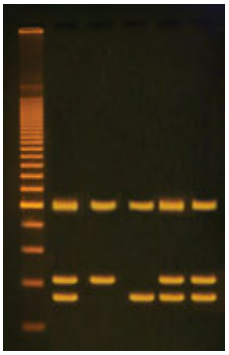
For 10 Groups. In this inquiry-based lab, your class will explore the genetic diversity of ten selected plants. Students will isolate plant DNA and use PCR to amplify two polymorphic regions of the chloroplast genome. Digestion of PCR products and analysis by agarose gel electrophoresis will then be used to generate unique identification profiles for each plant. *Requires shipment on wet ice.*

Extraction 2 hrs.
PCR Set Up 10 min.
PCR 2 hrs.
DNA Digest 60 min.
Electrophoresis 60 min.
Staining 5 min. to overnight



Cat. #962

Identification of Genetically Modified Foods Using PCR



For 10 Groups. Some foods contain raw materials from genetically modified organisms (GMO). Examples include tofu, corn flakes and corn meal. In this experiment, your students will extract DNA from food or plant material and perform PCR to determine if any GM indicator genes are present. Amplified DNA is separated and sized by agarose gel electrophoresis. *Requires 1 to 3 day shipping.*

Extraction 45 min.
PCR Set Up 10 min.
PCR 2 hrs.
Electrophoresis 60 min.
Staining 5 min.

RELATED PRODUCTS

Cat. #625

PCR EdvoBeads™

Includes 25 Beads. Room Temperature Stable. Requires no wet ice shipping!

PCR EdvoBeads™ have been optimized for PCR reactions and contain buffer, nucleotides and *Taq* DNA Polymerase. The only reagents that must be added to the reaction are template DNA and specific primers.

Cat. #PCR EdvoBeads™ PLUS

PCR EdvoBeads™ PLUS

NEW

Includes 25 Beads. Room Temperature Stable. Requires no wet ice shipping!

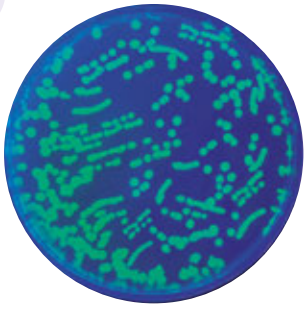
Each PCR EdvoBead™ PLUS contains: dNTP Mixture, *Taq* DNA Polymerase, *Taq* DNA Polymerase Buffer, $MgCl_2$, and Reaction Buffer.

Used with kits 330, 332, 333, 345, 858, and 962.

Cat. #323

GFP Transformation Extension: Colony PCR

This kit is intended for use in conjunction with Edvotek Transformation Kits 222, 223 or 303.



For 10 Groups. Colony PCR represents a simple and easy way to determine whether cloning and transformation experiments were successful. In this experiment, students will use colony PCR to analyze bacteria transformed with pFluoroGreen. A single colony will be used as the DNA template for PCR. The resulting PCR sample will then be analyzed using agarose gel electrophoresis. If the bacteria have been transformed successfully, a PCR product representing the GFP gene will be produced. A bacterial housekeeping gene is amplified at the same time as a positive control. The presence of both bands is indicative of a successful transformation experiment.

Extraction 60 min.
PCR Set Up 10 min.
PCR 2 hrs.
Electrophoresis 60 min.
Staining 5 min. to overnight

Storage: Some Components Require Refrigerator and Freezer Storage Upon Receipt.

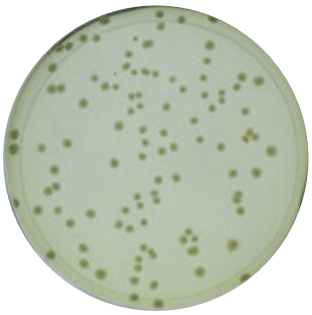
CLICK HERE **For Experiment #323 Components and Requirements.**

NEW

Cat. #331

Investigating Synthetic Biology

Advanced Topic



For 5 Groups. Teach your students about synthetic biology with this exciting and exclusive lab! Students use PCR to amplify the coding sequence of the BSMT1 enzyme. This interesting enzyme is responsible for the formation of methyl salicylate, a chemical with a strong "wintergreen" odor. The PCR product is purified, restriction digested, and inserted into a plasmid vector. The resulting recombinant DNA is then used to transform *E. coli* BactoBeads™. Finally, students design an experiment to express the enzyme from their transformants and perform a smell test to confirm that the bacterial factories are working!

Module I: 2 hours
Module II: 60 minutes
Module III: 2 hours
Module IV: 75 minutes
Module V: 2 hours + overnight
Module VI: 3 hours 20 minutes + overnight
Module VII: 15 minutes
**This experiment requires a multiple day transformation.*

Storage: Some Components Require Refrigerator and Freezer Storage Upon Receipt.

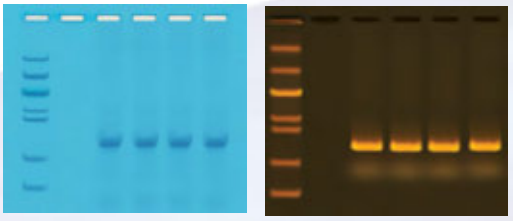
CLICK HERE **For Experiment #331 Components and Requirements.**

Cat. #372

Quick PCR

For 10 Groups. In this experiment, students will gain an understanding of the traditional three-step Polymerase Chain Reaction (PCR). Using PCR and Agarose Gel Electrophoresis, they will analyze a small section of Lambda DNA in a time-saving two-step process.

PCR Set Up 10 min.
PCR 30 min.
Electrophoresis 30 min.
Staining 5 min. to overnight



Storage: Some Components Require Freezer Storage Upon Receipt.

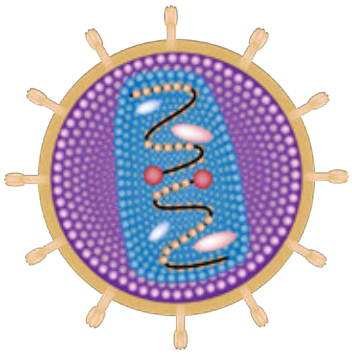
CLICK HERE **For Experiment #372 Components and Requirements.**

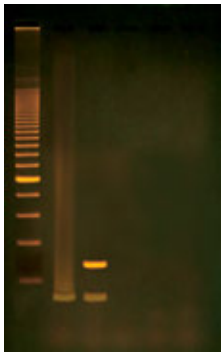
Cat. #335

Reverse Transcription PCR (RT-PCR) The Molecular Biology of HIV Replication

Advanced Topic

PCR Set Up 10 min.
PCR 3 hrs.
Electrophoresis 60 min.
Staining 5 min.





For 6 Groups. A specific mRNA is reverse transcribed to double-stranded DNA. This DNA product is then amplified by PCR. This reaction demonstrates the mode of replication of HIV, which contains reverse transcriptase. This experiment is the first introduction of a commercial RNA experiment for the classroom laboratory. *Requires shipment on wet ice.*

Storage: Some Components Require Freezer Storage Upon Receipt.

CLICK HERE **For Experiment #335 Components and Requirements.**

Cat. #337

Drosophila Genotyping Using PCR

Advanced Topic

Extraction 45 min.
PCR Set Up 10 min.
PCR 2 hrs.
Electrophoresis 60 min.
Staining 5 min. to overnight

For 10 Groups. Students will learn about DNA polymorphisms by amplifying DNA regions that vary between wild & mutant *Drosophila*. Amplified DNA from wild-type and white-eyed flies are separated by agarose gel electrophoresis and analyzed. *Kit contains LIVE materials which must be requested 3 weeks prior to lab.*

Storage: Some Components Require Freezer Storage Upon Receipt.

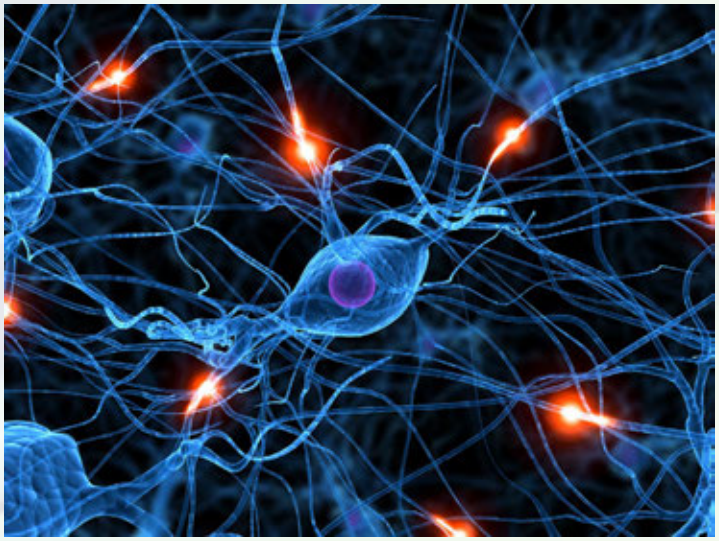
CLICK HERE **For Experiment #337 Components and Requirements.**

ALSO Available:
Kit Replenisher, excluding Drosophila.
Cat. #337-FB

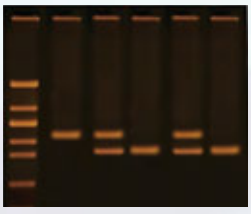
NEW

Cat. #1125

Diagnosing Huntington's Using PCR



For 5 complete sets of reactions. In this experiment, students will conduct a DNA fingerprinting exercise on simulated patient samples to determine if family members are heterozygous or homozygous for Huntington's Disease. Students will then analyze the amplified DNA segments by agarose gel electrophoresis.



Storage: Some Components Require Freezer Storage Upon Receipt.

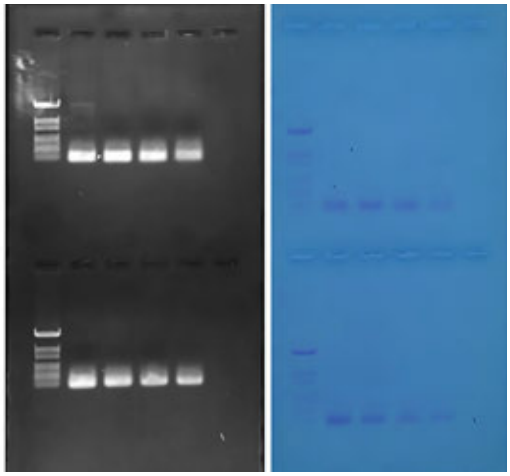
CLICK HERE **For Experiment #1125 Components and Requirements.**

NEW

Cat. #380

Discovering Quantitative PCR Amplification and Analysis

For 4 Groups. Quantitative PCR (qPCR, also known as real time PCR) simultaneously amplifies and detects targeted DNA allowing scientists to discover the starting amount of a specific DNA sequence in an experimental sample. This powerful and precise technology has become a cornerstone of modern genetics research, biological monitoring, and medical diagnostics. For students, performing qPCR offers the challenge of performing a mathematically and technically advanced experiment, the opportunity to understand key molecular concepts through hands on learning, and an essential skill for future research work. In this specially adapted education qPCR experiment, students will quantify the DNA concentration of four experimental samples using a standard curve approach and then confirm the experiment's specificity and accuracy through gel electrophoresis, melt curve analysis, and data analysis.
This kit must be used with a RT (qPCR) Thermal Cycler.



Storage: Some Components Require Freezer Storage Upon Receipt.

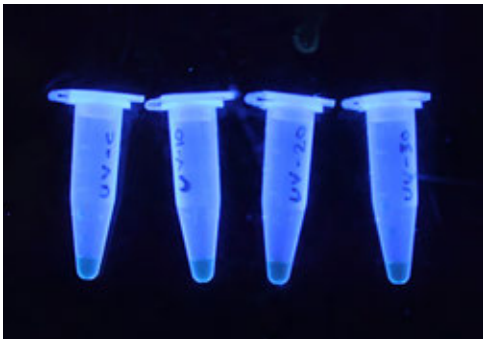
CLICK HERE For Experiment #380 Components and Requirements.

NEW

Cat. #381

Break Through! Testing DNA Damage Using Quantitative PCR

For 4 Groups. The integrity and stability of DNA is essential to life. However, everyday this molecule is under assault from environmental stressors like UV radiation, mutagenic chemicals, and even normal metabolic processes. In this guided inquiry lab students will use the cutting edge technology of QPCR to investigate and quantify DNA damage due to physical (UV radiation) or chemical (DNAseI) disruptions. By designing and performing the experiments students will master advanced analytical and technical skills as well as deepen their understanding of key molecular biology and medical concepts.
This kit must be used with a RT (qPCR) Thermal Cycler.



Storage: Some Components Require Freezer Storage Upon Receipt.

CLICK HERE For Experiment #381 Components and Requirements.

PERFECT PARTNER

Cat. #558

Midrange UV Transilluminator

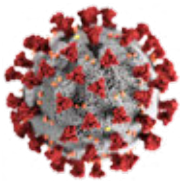
CLICK HERE

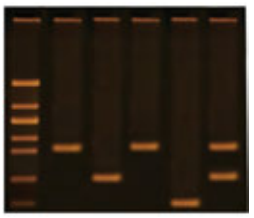
EDVOTEK®'s Midrange UV Transilluminator is designed to visualize DNA stained with either ethidium bromide or SYBR® Safe. The UV filter measures 7 x 14 cm which is optimized for viewing gels cast from EDVOTEK® electrophoresis chambers. Safety features include a UV blocking cover and an automatic power-cut off when the cover is opened.

NEW

Cat. #363

Detecting COVID-19 Using Reverse-Transcription PCR (RT-PCR)





For 25 Students Working in 5 Groups. Reverse-transcription PCR (RT-PCR) is the gold standard for the detection of SARS-CoV-2 due to the sensitivity, specificity, and feasibility of the test. In this simulated RT-PCR experiment, students will explore the diagnostic test used worldwide to diagnose and monitor the spread of COVID-19. This experiment requires a PCR thermal cycler.

Storage: Some Components Require Freezer Storage Upon Receipt.

CLICK HERE **For Experiment #363 Components and Requirements.**

NOTE: This experiment is a simulation and intended solely for educational purposes. There are no virus or human DNA products included in this experiment. The experiment will not detect SARS-CoV-2.

RELATED EQUIPMENT

NEW

Cat. #5073

EDGE™ PCR LabStation™

CLICK HERE

Includes:

1 Cat. #540 EdvoCycler™ Jr.
1 Cat. #500 EDGE™ Integrated Electrophoresis Apparatus
1 Cat. #590 Variable Micropipette (5 - 50 µL)

Cat. # 5067

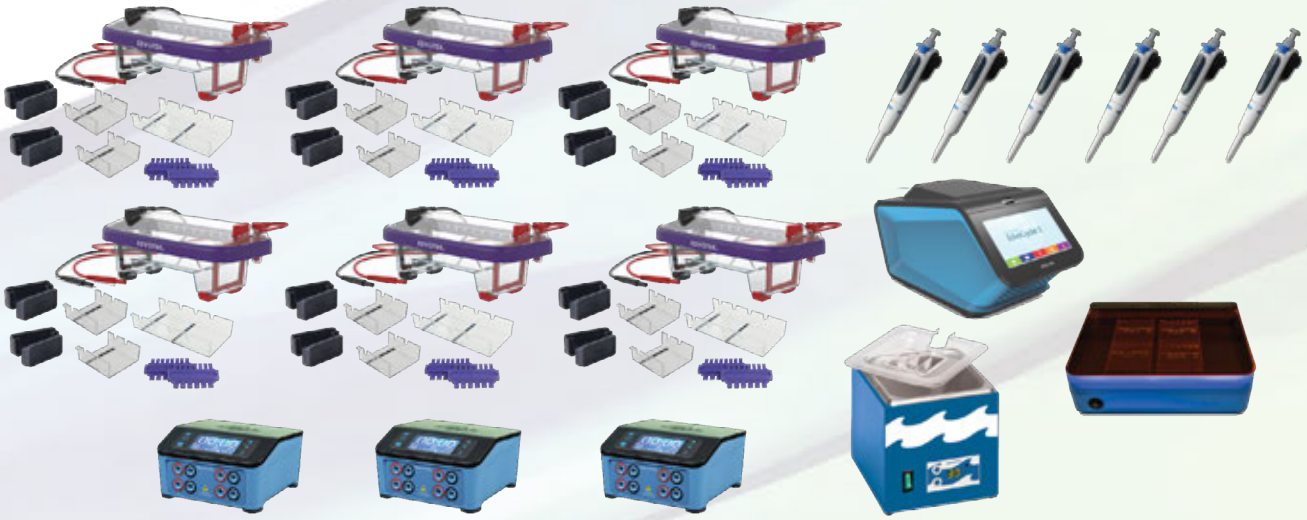
Classroom PCR LabStation™

CLICK HERE

Includes:

1 Cat. #541-542 EdvoCycler™ 2 (48 x 0.2 mL)
6 Cat. #502-504 M12 Complete™ Package (7 x 14 cm Tray & 7 x 7 cm Trays (2)
3 Cat. #5010-Q QuadraSource™ Power Supply (30-300 V for 1 or 4 units)
6 Cat. #590 Variable Micropipette (5 - 50 µL)
1 Cat. #557 TruBlu™ 2 Transilluminator
1 Cat. #539 1.8 L Waterbath

Check Out Our Related Video:



7

NEW

Cat. #935

Battling Bacteria: Ecosystem Dynamics in a Petri Dish

AP ENVIRONMENTAL

Complete in 1 week.

For 10 Groups. In this experiment students create their own microbial ecosystems and investigate the dynamics of competition and abiotic/biotic change on community composition. By using bacteria with short generation times students can observe, test, and collect their own data on key ecological phenomena in a week!

- Understand niches, biotic/abiotic factors, and species interactions.
- Create and manipulate a microbial ecosystem.
- Investigate competition and test Gause's law.
- Explore how different species respond to stress and environmental change.

Storage: Some Components Require Freezer Storage Upon Receipt.

CLICK HERE **For Experiment #935 Components and Requirements.**

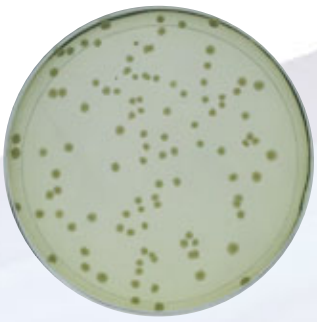
NEW

Cat. #310

Hack the Planet: Using CRISPR to Terraform Mars

Complete in three 1-hour modules.

For 5 Groups. In this experiment, students will engineer bacteria that are capable of surviving on a distant planet! Students will simulate the use of CRISPR-Cas9 to modify bacterial DNA, which will then be transformed into auxotrophic *E. coli* that are incapable of surviving on the Martian surface. Only bacteria that receive the successfully edited DNA can survive, thrive, and help to terraform Mars!



Storage: Some Components Require Freezer Storage Upon Receipt.

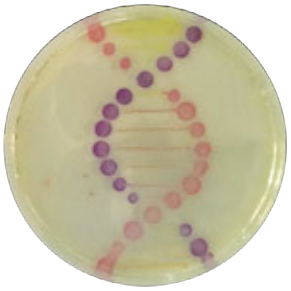
CLICK HERE **For Experiment #310 Components and Requirements.**

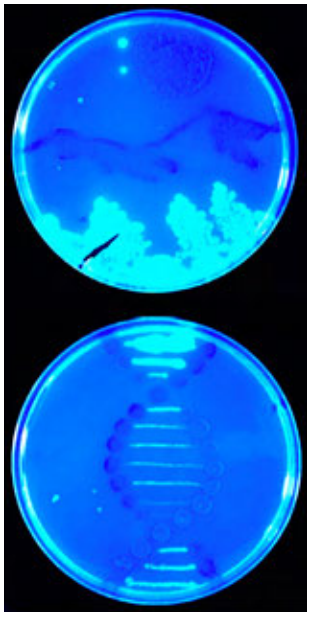
NEW

Cat. #226

Living Art: Adding STEAM to Transformations

For 25 Students. In this experiment, students will harness the color producing power of transformed bacteria to create works of living microbial art.





Storage: Some Components Require Refrigerator and Freezer Storage Upon Receipt.

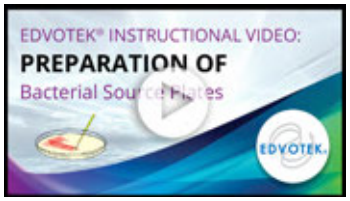
CLICK HERE **For Experiment #226 Components and Requirements.**

This kit is to be used in conjunction with EDVOTEK® Cat. #222, #223, #224, or #303.

NEW

EDVOTEK® Instructional Videos

The following related videos are recommended for this section:



https://www.youtube.com/user/EdvotekInc

PERFECT PARTNER

Cat. #546

EDVOTEK® Incubation Oven

This economical bacterial incubator features a digital temperature control with a range from 5 ° above ambient to 60 °C. Ideal for growing bacteria on agar plates at 37 °C or for Southern and Western Blot analysis at 60 °C. Includes two adjustable/removable shelves for increased capacity. Accepts bottles and flasks up to 2 L.

- Internal Dimensions (w x d x h): 26 x 23.5 x 32.5 cm
- External Dimensions (w x d x h): 33.5 x 37 x 47.5 cm

IMPROVED!

BEST SELLER

Cat. #223-AP08

Transformation of *E.coli* with Green Fluorescent Proteins (GFP)

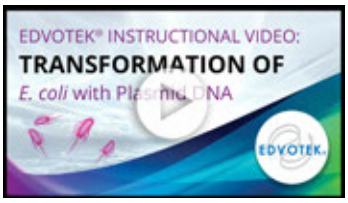
Set Up & Plating 50 min.
Incubation overnight
Transformation 15 min.

For 10 Groups. In this experiment, students will explore the biological process of bacterial transformation using *E. coli* and plasmid DNA. At the end of the activity, students will have experience observing and analyzing acquired traits (ampicillin resistance and fluorescence) as exhibited by transformed bacterial cells.

Storage: Some Components Require Refrigerator and Freezer Storage Upon Receipt.

CLICK HERE For Experiment #223-AP08 Components and Requirements.

Check Out Our Related Video:

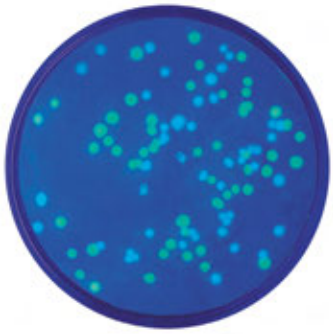


IMPROVED!

Cat. #222

Transformation of *E.coli* with Blue and Green Fluorescent Proteins

Complete in 50 min.
and grow overnight



For 10 Groups. The Green Fluorescent Protein (GFP), which is responsible for bioluminescence in the jellyfish *Aequorea victoria*, is used extensively in all areas of science. Many organisms have been transformed with the GFP gene. It has proven to be so useful that scientists have mutated it to produce Blue Fluorescent Protein (BFP). In this simple experiment your students will transform bacteria either with GFP, BFP or both!

Storage: Some Components Require Refrigerator and Freezer Storage Upon Receipt.

CLICK HERE For Experiment #222 Components and Requirements.

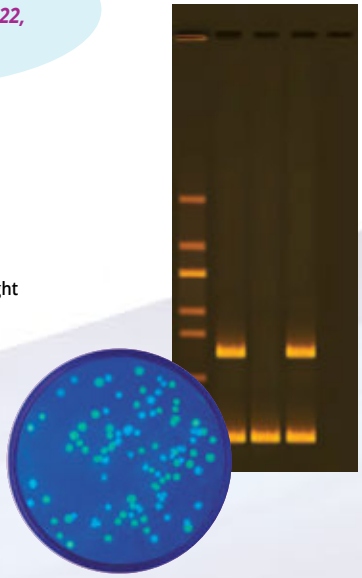
Cat. #323

GFP Transformation Extension: Colony PCR

This kit is to be used in conjunction with EDVOTEK® Cat. #222, #223, or #303.

For 10 Groups. Colony PCR represents a simple and easy way to determine whether cloning and transformation experiments were successful. In this experiment, students will use colony PCR to analyze bacteria transformed with pFluoroGreen. A single colony will be used as the DNA template for PCR. The resulting PCR sample will then be analyzed using agarose gel electrophoresis. If the bacteria have been transformed successfully, a PCR product representing the GFP gene will be produced. A bacterial housekeeping gene is amplified at the same time as a positive control. The presence of both bands is indicative of a successful transformation experiment.

Extraction 60 min.
PCR Set Up 10 min.
PCR 2 hrs.
Electrophoresis 60 min.
Staining 5 min. to overnight



Storage: Some Components Require Refrigerator and Freezer Storage Upon Receipt.

CLICK HERE For Experiment #323 Components and Requirements.

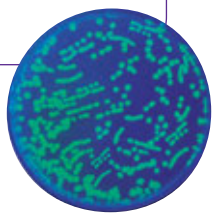
Cat. #303

Exploring Biotechnology with Green Fluorescent Protein (GFP)

For 6 experiments with 4 modules each. Four experimental modules are combined into one experiment to provide a comprehensive biotechnology exploration focusing on the green fluorescent protein (GFP). Bacterial cells are transformed to express the green fluorescent protein (GFP). The transformed cells are then grown and the GFP is purified by column chromatography. Finally, the purity of the protein fractions are analyzed by SDS polyacrylamide electrophoresis.

Storage: Some Components Require Refrigerator and Freezer Storage Upon Receipt.

CLICK HERE **For Experiment #303 Components and Requirements.**



Transformation 45 min.
Isolation of GFP 45 min.
Purification of GFP by Chromatography 45 min.
Analysis of GFP by Denaturing SDS Gel Electrophoresis 60 min.

Also includes a classroom demonstration option - perfect for distance learning!

DISTANCE LEARNING

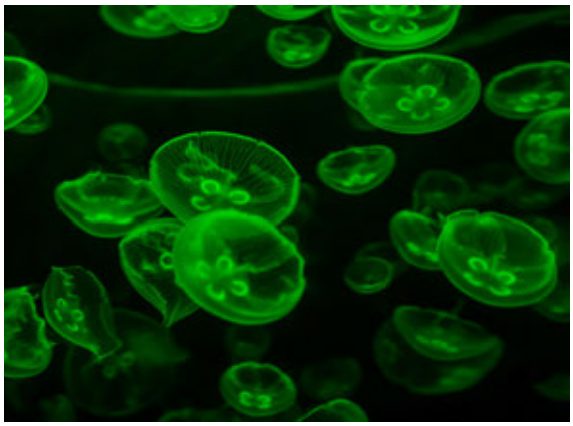
Check Out Our Related Videos for Cat. #303:

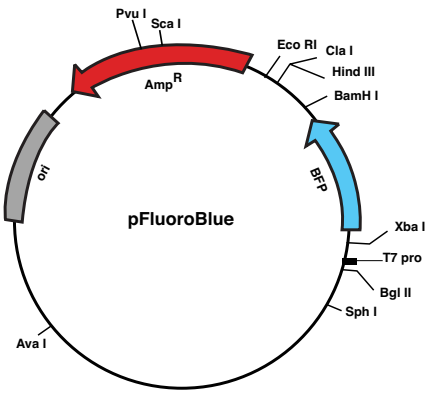
What Are Fluorescent Proteins?

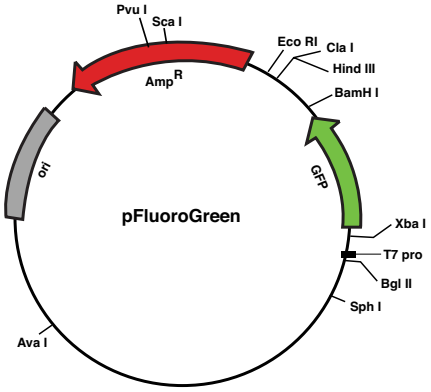
Many jellyfish use bioluminescence (biologically produced light) to attract prey, defend themselves and to find a mate. Bioluminescence is produced using special fluorescent proteins that, when illuminated with one wavelength of light, emit light in a different wavelength.

Scientists have studied this most closely in the jellyfish *Aequorea victoria*. The bioluminescence protein Green Fluorescent Protein (GFP) was identified from these jellyfish in the 1960s and the gene characterized in 1992.

This amazing jellyfish gene can cause bioluminescence in many other types of organisms including bacteria, mammals and plants! By attaching the GFP gene to another gene, you can follow where the second gene is switched on (or expressed) in living cells. GFP has been so useful that scientists have introduced a mutation to generate Blue Fluorescent Protein (BFP).







RELATED PRODUCTS

Cat. #546

EDVOTEK® Incubation Oven

CLICK HERE

This economical bacterial incubator features a digital temperature control with a range from Ambient +5 to 60 °C. Ideal for growing bacteria on agar plates at 37 °C. Includes two adjustable/removable shelves for increased capacity. Accepts bottles and flasks up to 2 L.

Cat. #539

EDVOTEK® 1.8 L Digital Water Bath

CLICK HERE

This classic Edvotek® water bath has been improved to now include digital temperature control! We've also added a low-water sensor to prevent burn-outs and deepened the chamber to hold more bottles and flasks. The stainless steel chamber is corrosion resistant and temperature controlled from ambient to 99 °C while using the included cover.

Cat. #534

Piccolo™ Microcentrifuge

The Piccolo™ Microcentrifuge is reliable, flexible, and convenient for quick spin downs, micro-filter cell separations and cell pelleting. Its small footprint, non-slip base, and quiet operation make it ideal for the classroom.

CLICK HERE

Petri Plates

- Small Petri Plates
- Large Petri Plates

Cat. #969

Long Wave UV Mini-Light

A hand-held UV light that is used to detect hydrolysis of the fluorescent substrate and fluorescent *Artemia* and *Daphnia* after their ingestion. Also useful for observing fluorescence in Green (GFP) and Blue (BFP) fluorescent proteins. Requires (4) AA batteries (not included).

CLICK HERE

Cat. #590

EDVOTEK® 5-50 µL Variable Micropipette

CLICK HERE

Our Variable Micropipettes are sturdily designed, easy to use, highly accurate and use standard micropipette tips. The volume is easily selected by twisting the top. The lightweight design and tip ejector makes operation fast & easy. A tool and instructions are included for self-calibration.

Cat. #594

EdvoPette™ Pipet Controller

This lightweight cordless pipetting controller ideally suited as an aliquoting tool for instructors and teaching assistants. It utilizes pipets from 1 - 100 mL and can be used for up to twenty hours when fully charged.

CLICK HERE

Bacterial Transformation Reagents

- Luria Broth Media
- Bacterial Plating Agar
- X-Gal
- ReadyPour™ Luria Broth Agar Base
- ReadyPour™ Luria Broth Agar Base with Ampicillin

BactoBeads™

- *E. coli* JM109 BactoBeads™
- *E. coli* GFP Host BactoBeads™
- *E. coli* OP50 BactoBeads™ (for *C. elegans*)
- *S. marcescens* BactoBeads™
- *B. subtilis* BactoBeads™

Cat. #221

Transformation of *E.coli* with pGAL™ *(Blue Colony)*

For 10 Groups. In this experiment, your students will develop an understanding of bacterial transformation of plasmid DNA by introducing an opportunity to observe an acquired phenotypic trait of the transformed bacterial cells. The presence of blue bacterial colonies visually demonstrates the expression of a specific gene for the Lac+ phenotype.

Storage: Some Components Require Refrigerator and Freezer Storage Upon Receipt.

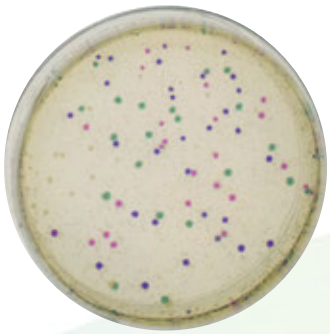
CLICK HERE For Experiment #221 Components and Requirements.

Complete in 50 min. and grow overnight

IMPROVED!

Cat. #224

Rainbow Transformation



For 10 Groups. Transformation is of central importance in molecular cloning since it allows for the selection, propagation, expression and purification of a gene. Positive selection for cells containing plasmid DNA is accomplished by antibiotic growth selection. In this experiment, your students will transform bacteria with a new set of rainbow color plasmids that transform non-pathogenic bacterial cells into bright, colorful cells.

Storage: Some Components Require Refrigerator and Freezer Storage Upon Receipt.

CLICK HERE For Experiment #224 Components and Requirements.

Set Up & Plating 50 min.
Incubation overnight
Transformation efficiency 15 min.

NEW

Cat. #331

Investigating Synthetic Biology

Advanced Topic

For 5 Groups. Teach your students about synthetic biology with this exciting and exclusive lab! Students use PCR to amplify the coding sequence of the BSMT1 enzyme. This interesting enzyme is responsible for the formation of methyl salicylate, a chemical with a strong "wintergreen" odor. The PCR product is purified, restriction digested, and inserted into a plasmid vector. The resulting recombinant DNA is then used to transform *E. coli* BactoBeads™. Finally, students design an experiment to express the enzyme from their transformants and perform a smell test to confirm that the bacterial factories are working!
Cat. #331 is recommended for college level courses.

Storage: Some Components Require Refrigerator and Freezer Storage Upon Receipt.

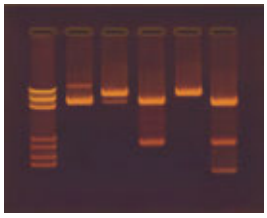
CLICK HERE For Experiment #331 Components and Requirements.

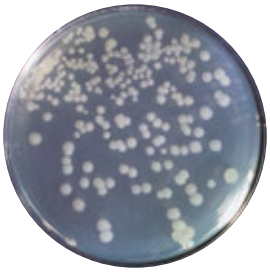
Module I: Amplification by PCR 2 hours or overnight
Electrophoresis 45 to 60 min.
Module II: Preparation for Ligation 90 to 110 min.
Module III: Ligation into vector 40 to 70 min.
Module IV: Transformation 30 to 45 min. and overnight incubation
Module V: Smell Assay 15 to 30 min. and overnight incubation
**This experiment requires a multiple day transformation.*

BEST SELLER

Cat. #301

Construction & Cloning of a DNA Recombinant





For 5 Plasmid Constructs & Analyses. Cloning is frequently performed to study gene structure and function, and to enhance gene expression. This experiment is divided into five modules. Clones are constructed by ligation of a vector and a fragment insert. The constructs are then transformed into competent cells and the cells are grown and selected for resistance. Plasmid DNA is then isolated from the transformants, cleaved with restriction enzymes, and analyzed by agarose gel electrophoresis. *Recommended for college-level courses.*

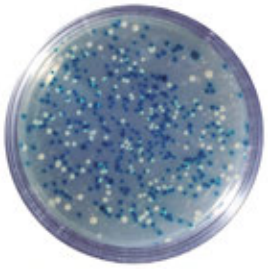
Module I:	Ligation 70 min.
	Electrophoresis 45 min.
Module II:	Transformation 70 min.
	Overnight incubation
Module III:	Culture 15 min.
Module IV:	Extraction 65-80 min.
Module V:	Restriction Enzyme Reaction 70 min.

Storage: Some Components Require Refrigerator and Freezer Storage Upon Receipt.

CLICK HERE For Experiment #301 Components and Requirements.

Cat. #300

Blue/White Cloning of a DNA Fragment & Assay of ß-galactosidase



For 5 Groups. When DNA is subcloned in the pUC polylinker region, ß-galactosidase production is interrupted, resulting in the inability of cells to hydrolyze X-Gal. This results in the production of white colonies amongst a background of blue colonies. This experiment provides a DNA fragment together with a linear plasmid and T4 DNA Ligase. Following the ligation to synthesize the recombinant plasmid, competent *E. coli* cells are transformed and the number of recombinant antibiotic resistant white and blue colonies are counted. ß-galactosidase activity is assayed from blue and white bacterial cells. This experiment can be broken down into three modules: ligation, transformation, and assay of ß-galactosidase. *Recommended for college-level courses.*

Module I:	Ligation 70 min.
Module II:	Transformation and Selection 60 min.
	Overnight incubation
Module III:	Assay of ß-galactosidase 60 min.

Storage: Some Components Require Refrigerator and Freezer Storage Upon Receipt.

CLICK HERE For Experiment #300 Components and Requirements.

NEW The Official Blog for EDVOTEK®

Interested in the biochemistry of hand sanitizer, mastering the ELISA, or DIY test tube racks? The EDVOTEK blog is the perfect place to start! Each week, our scientists cover interesting current events, happenings at EDVOTEK, and essential biotechnology tips! Check in often for new content, contest announcements, and intriguing trivia.

https://blog.edvotek.com/

Cat. #255

Purification & Size Determination of Green & Blue Fluorescent Proteins

Packing & running column 45 min.
Optional electrophoresis 60 min.
Staining (optional) 30 min.
Destaining (optional) 2 hours/overnight

For 6 Groups. When bacteria are used to make medicinally useful proteins by transformation, the protein of interest must be separated from all of the other cellular proteins. In this experiment, the unique fluorescent properties of GFP and BFP will be used during their purification from an *E.coli* extract. The column fractions containing GFP or BFP will be identified by fluorescence and then purified. As an optional activity, purified protein fractions can be separated by SDS polyacrylamide gel electrophoresis (SDS-PAGE) to estimate the purity and size of the GFP and BFP proteins.

Storage: Some Components Require Freezer Storage Upon Receipt.

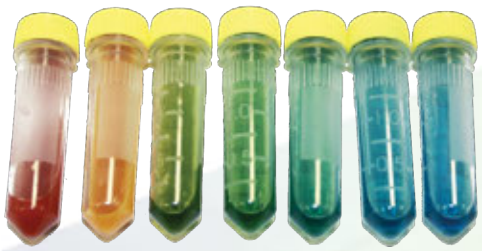
CLICK HERE **For Experiment #255 Components and Requirements.**

Cat. #304

The Future of Biofuels: Alcohol Fermentation

Complete over multiple lab periods.

For 5 Groups. Ethanol fermentation is the most common method for biofuel production worldwide. In this experiment, students will use small-scale flask fermenters to quantify ethanol production and sugar utilization by *Saccharomyces cerevisiae*. By controlling variables such as temperature and aeration, the students can compare the efficiency of the fermentations over a three day experiment.



Storage: Some Components Require Refrigerator and Freezer Storage Upon Receipt.

CLICK HERE **For Experiment #304 Components and Requirements.**

Cat. #305

Fermentation & Bioprocessing of Chromogenic Proteins

Complete over multiple lab periods.

For 5 Groups. Bioprocessing is the production and isolation of desired products from living cells. In this introduction to bioprocessing, students will use small-scale fermenters to produce chromogenic proteins using *E. coli*. Protein extracts will then be separated using column chromatography to analyze the success of the fermentation process. Finally, the protein solutions will be examined by SDS polyacrylamide gel electrophoresis to determine the purity of the chromogenic proteins.

Storage: Some Components Require Refrigerator and Freezer Storage Upon Receipt.

CLICK HERE **For Experiment #305 Components and Requirements.**

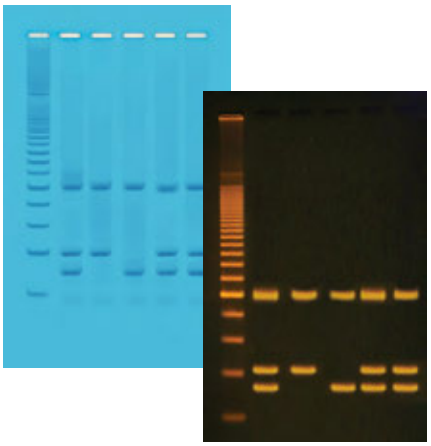
Cat. #962

Identification of Genetically Modified Foods Using PCR

AP ENVIRONMENTAL

Extraction 45 min.
PCR Set Up 10 min.
PCR 2 hrs.
Electrophoresis 60 min.
Staining 5 min.

For 10 Groups. Some foods contain raw materials from genetically modified organisms (GMO). Examples include tofu, corn flakes and corn meal. In this experiment, your students will extract DNA from food or plant material and perform PCR to determine if any GM indicator genes are present. Amplified DNA is separated and sized by agarose gel electrophoresis. *Requires 1 to 3 day shipping.*



Storage: Some Components Require Freezer Storage Upon Receipt.

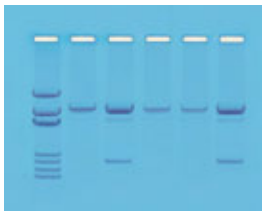
CLICK HERE **For Experiment #962 Components and Requirements.**

Cat. #121

Detection of Genetically Modified Organisms

AP ENVIRONMENTAL

Complete in 60 minutes



For 8 Gels/8 Lab Groups. For centuries, humans have used selective breeding and conventional hybridization to produce desirable qualities and to increase crop yields. Today, scientists use genetic engineering to directly manipulate the DNA, quickly producing these desirable traits. In this experiment, students will use agarose gel electrophoresis to explore the molecular methods used by scientists to identify genetically modified organisms. No thermal cycler is required. Students are also encouraged to explore the pros and cons surrounding the use of genetically modified organisms.

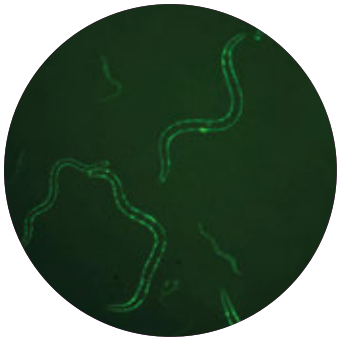
Storage: Room Temperature Stable. Storage of Ready-to-Load™ QuickStrip™ samples in the Refrigerator is Recommended.

CLICK HERE **For Experiment #121 Components and Requirements.**

Cat. #858

Lighting Up Life: Expression of GFP in *C. elegans*

*Kit contains LIVE materials. Please request materials 2 weeks prior to lab**



For 10 Groups. Scientists can directly manipulate an organism's genome to produce a phenotype using engineered genes called transgenes. In this experiment, students will use fluorescent microscopy and PCR to analyze *C. elegans* (nematodes) that have been engineered to express the Green Fluorescent Protein (GFP). *Recommended for college-level courses.*

Growing Bacteria Overnight
Plating Worms 15 min.
Worm Growth 3-4 days
Set Up 30 min.
PCR 2 hours or overnight
Electrophoresis 90 min.

Check Out Our Related Video:

Storage: Some Components Require Refrigerator and Freezer Storage Upon Receipt.

CLICK HERE **For Experiment #858 Components and Requirements.**

RELATED PRODUCTS

NEW

Cat. #5066

Personal PCR LabStation™

Includes:
1 Cat. #540 EdvoCycler™ Jr. (16 x 0.2 ml)
2 Cat. #502-504 M12 Complete™ Package (14 x 7 cm Tray & 7 x 7 cm Trays (2)
1 Cat. #5010-Q QuadraSource™ Power Supply (10-300 V, for 1 to 4 units)
2 Cat. #590 Variable Micropipette (5 - 50 µL)
1 Cat. #557 TruBlu™ 2 Transilluminator
1 Cat. #539 1.8 L Water Bath

CLICK HERE

NEW

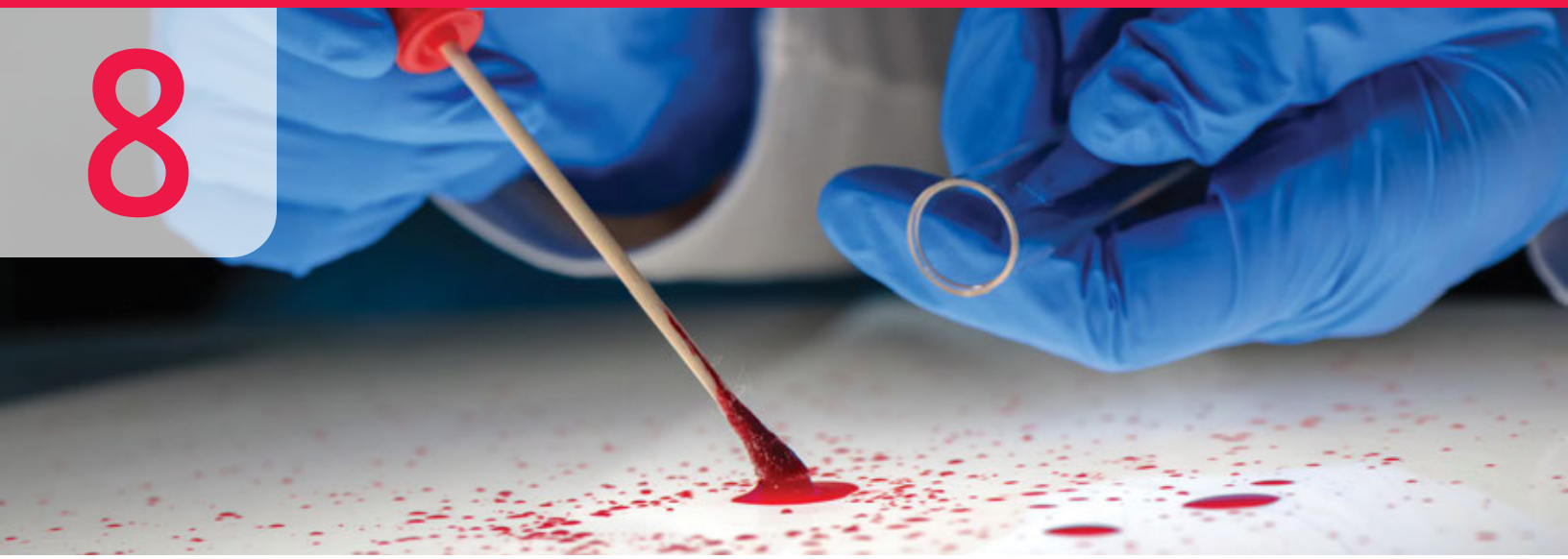
Cat. #557

TruBlu™ 2 Blue/White Transilluminator

The successor to the popular TruBlu™ has been improved with an enlarged viewing surface and high density LED light layout for clear and even visualization. The blue light mode enables visualization of SYBR® Safe stained DNA gels and white light enhances visualization of blue stained DNA or protein gels. Use the TruBlu™ 2 to excite green fluorescent protein (GFP), producing brilliant green fluorescence. The TruBlu™ 2 has enough surface area to simultaneously view up to eight 7 x 7 cm gels and combines the functions of two units into one!

CLICK HERE

8



What is a DNA Fingerprint?

If we analyze the polymorphisms (small differences in the DNA sequence) within a person's genome, we can generate a unique "DNA fingerprint." After DNA is extracted from biological samples, scientists use the polymerase chain reaction (PCR) to amplify specific places (loci) throughout the genome. The PCR products are analyzed using agarose gel electrophoresis. The PCR products appear on the gel as a series of bands with various sizes. Because DNA samples from different individuals produce different patterns of bands, scientists can use a DNA fingerprint to distinguish between individuals.

The best-known application of DNA fingerprinting is in forensic science. DNA fingerprinting techniques are utilized to analyze blood, tissue, or fluid evidence collected at accidents and crime scenes. The DNA fingerprint from a crime scene can be compared with the DNA fingerprints of different suspects or those stored in CODIS (COmbined DNA Index System), a computer database of DNA fingerprints collected from convicted offenders, arrested persons, crime scene evidence and missing persons. A match between the crime scene DNA and a suspect's DNA at a single locus does not prove guilt, nor does it rule out innocence. Therefore, multiple loci are tested. For example, the DNA fingerprints stored in CODIS contain data on thirteen loci. The odds of a match at all thirteen loci are less than one in a trillion!

Using our experiments, your students will compare "crime scene" DNA with "suspect" DNA! Try DNA Fingerprinting by PCR Amplification (Kit #130), DNA Fingerprinting Using Restriction Enzymes (Kit #225), or DNA Fingerprinting Using PCR (Kit #371).

DISTANCE LEARNING

NEW MyLab™ Distance Learning

Looking for experiments ideal for distance learning? With MyLab™ kits from EDVOTEK®, you can plan your curriculum and have all the materials sent directly to your students!

MyLab™ #1191

Forensics Blood Typing

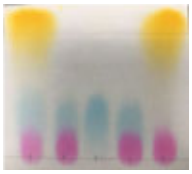
- Learn about basic forensic detection techniques
- Swab simulated crime scene samples to detect blood left at the scene
- Analyze the crime scene samples to determine the suspect's blood type
- Understand presumptive vs. confirmatory testing

Kit Includes: instructions and materials for 2-3 runs of each experiment.

MyLab™ #1230

Crime Scene DNA Fingerprinting

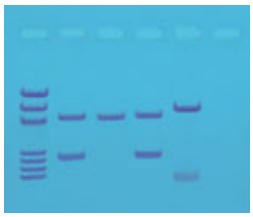
In this simulation of DNA fingerprinting, students will utilize paper chromatography to analyze the crime scene and suspect samples to identify 'whodunnit'.



Kit Includes: instructions and materials for 2-3 runs of each experiment.

Cat. #130

DNA Fingerprinting by PCR Amplification



For 8 Gels/8 Lab Groups. Forensic DNA fingerprinting has become a universally accepted crime-fighting tool. Recent advances use the polymerase chain reaction (PCR) to amplify human DNA obtained from crime scenes. This experiment, based on a crime scene scenario, has an inquiry-based component.

Complete in 45 min.

Storage: Room Temperature Stable. Storage of Ready-to-Load™ QuickStrip™ samples in the refrigerator is recommended.

CLICK HERE **For Experiment #130 Components and Requirements.**

Cat. #S-51

Whose DNA Was Left Behind?

For 10 Gels/10 Lab Groups. DNA obtained from 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. *NGSS-aligned with MS-LS3-A.*

Complete in 35 min.

Storage: Room Temperature Stable. Storage of QuickStrip™ Dye samples in the refrigerator is recommended.

CLICK HERE **For Experiment #S-51 Components and Requirements.**

NEW EDVOTEK® Instructional Videos

The following related videos are recommended for this section:

BEST SELLER

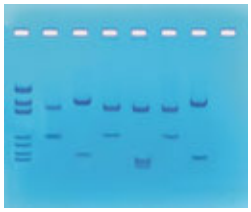
Cat. #225

DNA Fingerprinting Using Restriction Enzymes

Forensics

Restriction Enzyme Digests 35-60 min.
Electrophoresis 45 min.

For 6 Gels. Teach your students about restriction enzyme digests in the context of forensic science! Your students will cut DNA with restriction enzymes and then compare the banding pattern of the crime scene DNA versus that of two suspects using agarose gel electrophoresis.



Storage: Some Components Require Refrigerator and Freezer Storage Upon Receipt.

No Ice Shipment Dryzymes

CLICK HERE **For Experiment #225 Components and Requirements.**

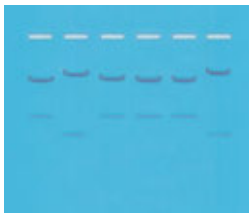
BEST SELLER

Cat. #109

DNA Fingerprinting by Restriction Enzyme Patterns

Forensics

For 8 Gels/8 Lab Groups. Basic concepts of DNA fingerprinting are featured in this lab by comparing crime scene DNA with suspect DNAs. Fingerprint patterns are separated by agarose gel electrophoresis and the students determine who may have done-it!



Complete in 45 min.

Storage: Room Temperature Stable. Storage of Ready-to-Load™ QuickStrip™ samples in the refrigerator is recommended.

QuickStrips

CLICK HERE **For Experiment #109 Components and Requirements.**

BEST SELLER

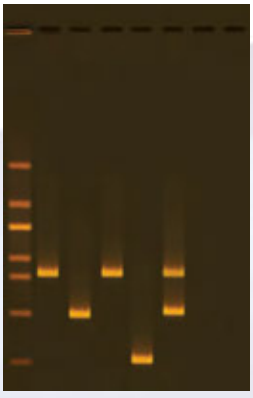
Cat. #371

DNA Fingerprinting Using PCR

Advanced Topic

Forensics

Set Up 30 min.
PCR 2 hrs.
Electrophoresis 45 min.



For 25 students working in 5 groups. Give your students the opportunity to carry out PCR in the classroom! This kit provides easy to follow instructions for your students to develop various crime scene scenarios independently. Plasmid DNA, when amplified by PCR, provides products that represent individual DNA profiles. Your students can then solve a crime!

Storage: Some Components Require Freezer Storage Upon Receipt.

CLICK HERE **For Experiment #371 Components and Requirements.**

RELATED EQUIPMENT

NEW

Cat. #557

TruBlu™ 2 Blue/White Transilluminator

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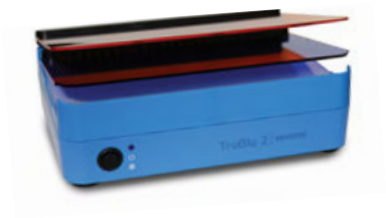
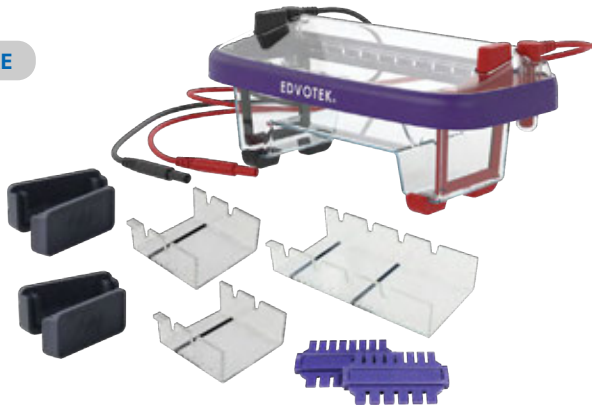


Cat. #502-504

M12 Complete™ Electrophoresis Package

CLICK HERE



Cat. #5010-Q

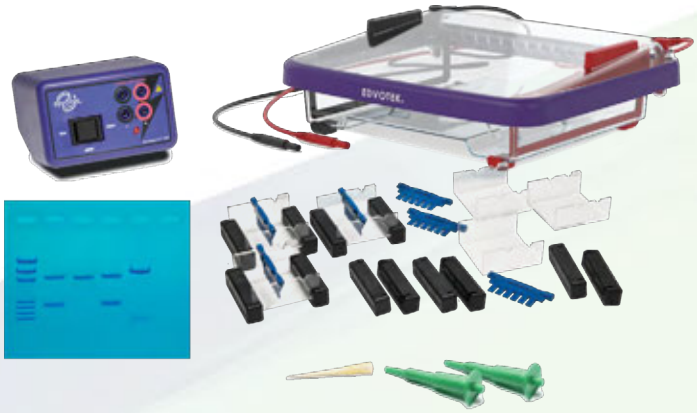
QuadraSource™ Power Supply (10-300 V)

CLICK HERE

Cat. #5062

Classroom DNA Electrophosis LabStation™

CLICK HERE



Cat. #591

Edvotek® Variable Micropipette (10 - 100 µL)

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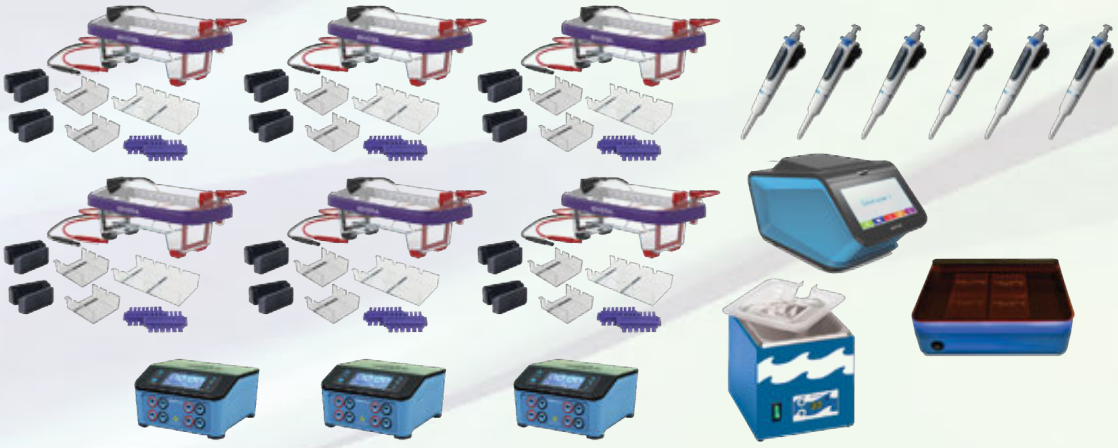
Cat. # 5067

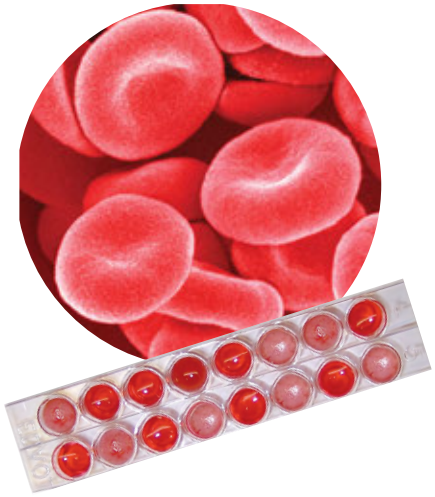
Classroom PCR LabStation™

CLICK HERE



Cat. # 191

Forensic Blood Typing



For 10 Groups. This objective of this experiment is to introduce students 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.

Complete in 50 min.

Storage: Store in Refrigerator Upon Receipt.

CLICK HERE For Experiment #191 Components and Requirements.

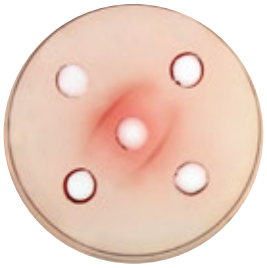
Cat. #192

Forensic Antigen Detection

Module I: Complete in 35 min.
Module II: Incubation overnight.

For 10 Groups. Antigen-Antibody interactions are key to many of our body's immune responses and are the foundation of several biotechnologies including ELISA and Ouchterlony tests. In this experiment, students perform and interpret an Ouchterlony double immunodiffusion to understand antigen-antibody specificity, cross-reactivity, and precipitation. The experiment also introduces students to key steps in forensic investigations and their results will confirm the identity of simulated blood collected from a crime scene.

- Discover and see antigen-antibody interactions
- Perform a double diffusion Ouchterlony test
- Interpret results to identify simulated blood samples
- Learn forensic analysis procedures
- Understand the role of presumptive and confirmatory tests



Storage: Some Components Require Refrigerator Storage Upon Receipt.

CLICK HERE For Experiment #192 Components and Requirements.

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Visit the **FORENSICS** Section of our **NEW** online Learning Center where you can access many **FREE** resources!

Lesson Plans, Presentations, Troubleshooting Guides, and MORE!

Cat. #193

Forensic Enzymology

For 10 Groups. Enzymes can accomplish a lot but can they also solve a crime? In this simulation experiment, students will determine the level of the enzyme amylase for two drivers to determine who was responsible for a deadly accident. They'll use an iodine test to visualize the disappearance of the substrate (starch) and they'll use a Dinitrosalicylic acid test to visualize the appearance of produce (maltose). A great way to understand enzymatic reactions in a fun and engaging forensic context.

- Understand the role of enzymes as biological catalysts.
- Determine enzyme activity levels based on two colorimetric tests.
- Observe how enzyme levels affect substrate disappearance & product creation rate.
- Learn forensic analysis procedures that maintain the integrity of the evidence.

Modules I and II: Complete in 45 min. each

Storage: Store in Refrigerator Upon Receipt.

CLICK HERE For Experiment #193 Components and Requirements.

Cat. #194

Forensic Enhancement Techniques

For 10 Groups. 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 involving gang warfare over territory. 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.

Complete in 35 min.

Storage: Store in Refrigerator Upon Receipt.

CLICK HERE For Experiment #194 Components and Requirements.

PERFECT PARTNER

Cat. #969

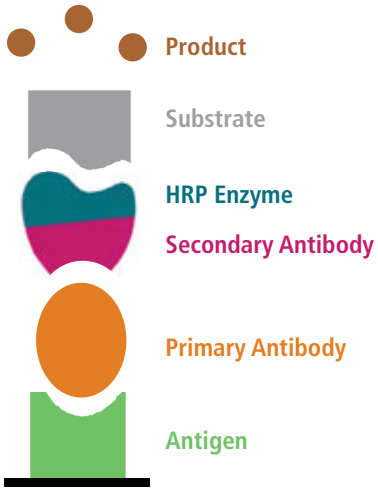
Long Wave UV Mini-Light

A hand-held UV light that is used to detect hydrolysis of the fluorescent substrate and fluorescent *Artemia* and *Daphnia* after their ingestion. Also useful for observing fluorescence in Green (GFP) and Blue (BFP) fluorescent proteins. Requires (4) AA batteries (not included).

Cat. #195

Forensic Toxicology

For 10 Groups. 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.



Complete in 60 min.

Storage: Some Components Require Refrigerator Storage Upon Receipt.

CLICK HERE **For Experiment #195 Components and Requirements.**

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Cat. #S-91

Whose Fingerprints Were Left Behind?

For 10 Gels/10 Lab Groups. After a crime has been committed, the evidence left behind can identify a potential culprit, although a single piece of evidence is not usually enough to convict someone. 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.

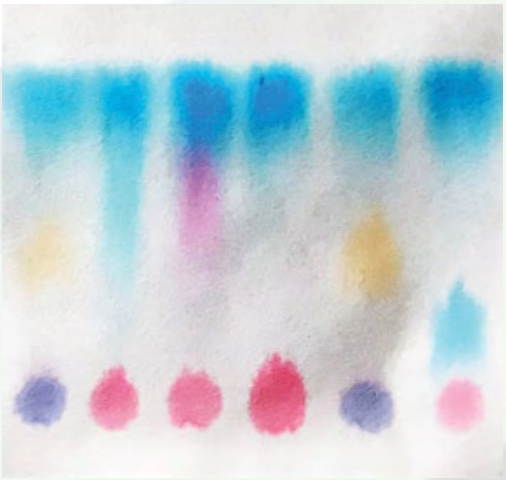
Complete in 50 min.

Storage: Room Temperature.

CLICK HERE **For Experiment #S-91 Components and Requirements.**

Cat. #196

Write to a Fair Trial: Forensic Handwriting Analysis



For 10 Groups. 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 5 potential suspects. Only after careful analysis will they be able to solve the classroom crime.

Spotting 10 min., Separation 45 min.

Storage: Room Temperature.

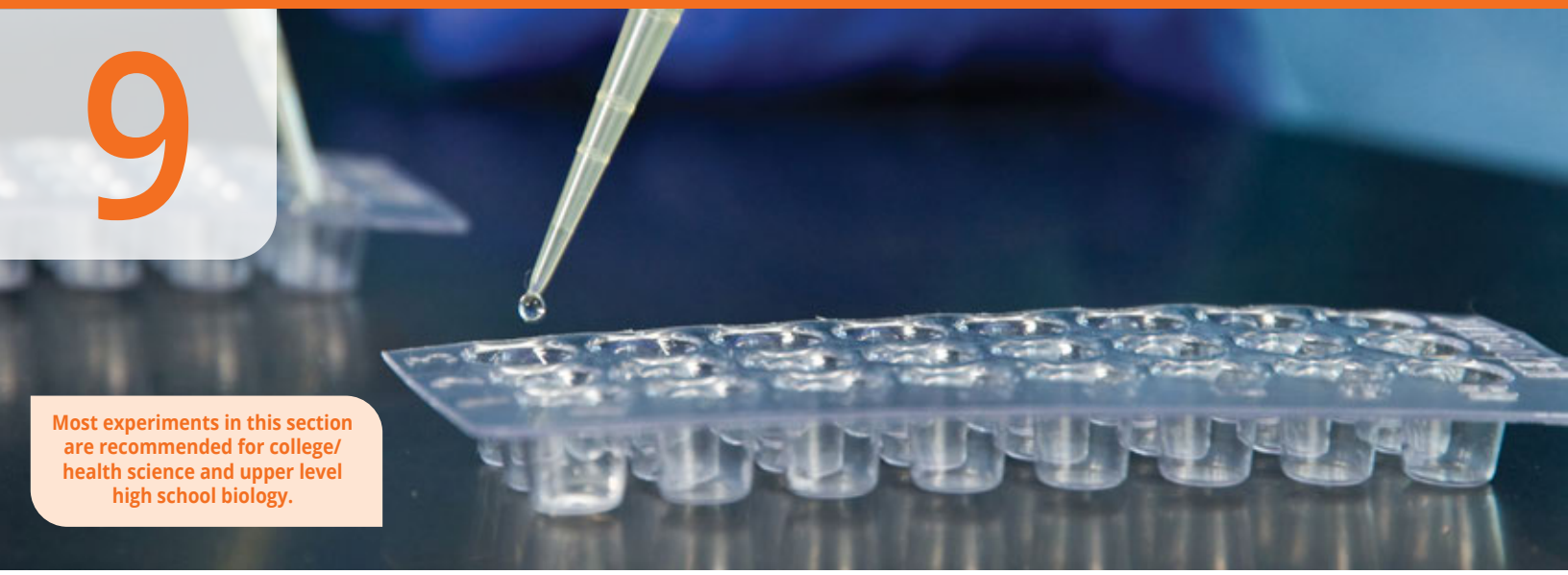
CLICK HERE **For Experiment #196 Components and Requirements.**

We have your lab notebook. Leave $100

We have your lab notebook. Leave $100

We have your lab notebook. Leave $100

9



Most experiments in this section are recommended for college/ health science and upper level high school biology.

What is an Antibody?

Antibodies (also called immunoglobulins, or Igs) are specialized proteins that allow the immune system to distinguish between "self" and "non-self" proteins or polysaccharides. Antibody molecules comprise four linked polypeptide chains: two "heavy chains" and two "light chains" that are connected by disulfide bonds (Figure 1). The amino acid sequence of the antigen-binding site is variable, allowing each antibody to recognize a unique epitope (a particular location within an antigen). Because of their specificity, antibodies can be used to detect the presence of specific biomolecules (e.g. peptides, proteins, antigens and hormones) in a complex sample.

Antibodies are produced when animals (e.g. rabbits, mice and guinea pigs) are exposed to an antigen. Since many different immune cells within the animal produce antibodies in response to the antigen, the serum will contain a mixture of antibodies that vary in their ability to bind the antigen. This mixture of antibodies is called polyclonal. If we isolate and culture individual immune cells from these animals, we can create a monoclonal antibody that recognizes a single epitope.

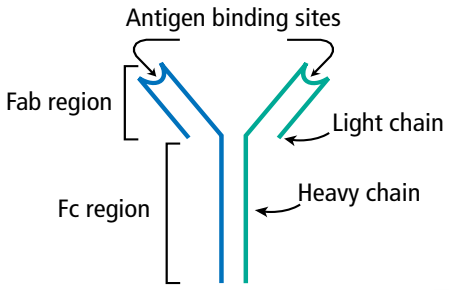


Figure 1: General Structure of an Antibody.

In the laboratory, the Western blot (or immunoblot) uses antibodies to detect the presence of a protein in a mixed sample. Ouchterlony double diffusion is used to determine whether an antibody will react with a particular antigen. Radial immunodiffusion is used to determine the relative concentration of an antigen. The Enzyme Linked ImmunoSorbent Assay (ELISA) is an extremely sensitive technique that detects the quantity of antigens within a sample.

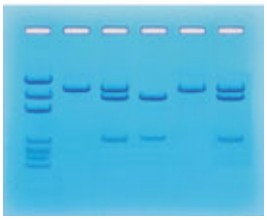
To be used in the laboratory, antibodies must have a specific, robust and reproducible interaction with their antigen. Antibodies that have a high affinity for non-specific antigens will have unwanted cross-reactions that can result in high backgrounds. In contrast, an antibody with a weak affinity may not be sensitive enough for antigen detection. These antibodies would produce results with a high false-positive or false-negative rate.

NEW

Cat. #123

Nucleic Acid Testing for COVID-19

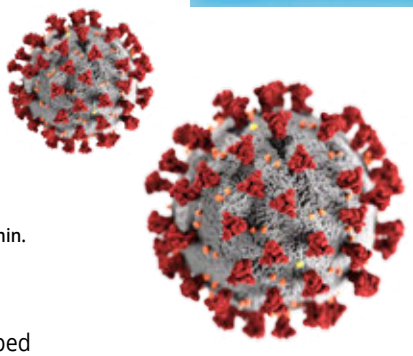
Complete in 45 min.



For 8 Gels/8 Lab Groups. SARS-CoV-2 is a novel coronavirus that has caused a worldwide outbreak of respiratory disease beginning in 2019. In this simulated medical test, we will use electrophoresis to detect the presence of the SARS-CoV-2 virus in samples from patients with symptoms of COVID-19.

Storage: Room temperature stable. Storage of Ready-to-Load QuickStrip™ samples in the refrigerator is recommended.

CLICK HERE For Experiment #123 Components and Requirements.



NEW

Cat. #263

Expanding Our Testing: Using ELISA to Detect COVID-19

Complete in 60 min.

For 10 Groups. Due to the worldwide spread of the respiratory disease COVID-19, scientists developed diagnostic tests in order to identify and monitor the disease. In this simulated medical test, students will perform the ELISA to detect the presence of COVID-19 antibodies in simulated patient samples.

Storage: Some Components Require Refrigerator Storage.

CLICK HERE For Experiment #263 Components and Requirements.

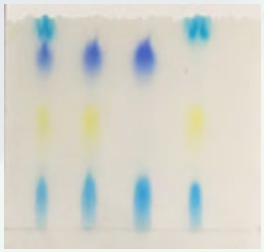
NEW

Cat. #211

Dangerous or Delicious: Using Chromatography to Examine Vaping

Spotting Plates - 20 min.
TLC Separation - 5 min.

For 8 Separations. Vaping is rising in popularity but many of its health effects are unknown. In this experiment, students become medical researchers and investigate the chemical contents of three simulated e-liquids using thin layer chromatography.



Storage: Some Components Require Refrigerator Storage.

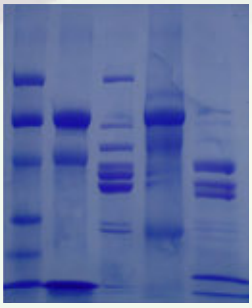
CLICK HERE For Experiment #211 Components and Requirements.

NEW

Cat. #1110

Cell Types in the Brain

For 6 Groups Sharing 3 Polyacrylamide Gels. The brain is an incredibly complex organ and is responsible for regulating almost everything within our body. It allows us to form complex thoughts, read, write, move, breathe, play sports, and listen to music. It does this through a network of cells working together to function. The objective of the experiment is for students to examine the differences between cell types in the brain based on their profiles of proteins.



Storage: Some Components Require Freezer Storage.

CLICK HERE For Experiment #1110 Components and Requirements.

SDS PAGE - 60 min.
Staining - 1-3 hours or overnight

Cat. #269

Introduction to ELISA Reactions

For 10 Groups. Your students will learn the basic principles of the Enzyme-Linked Immunosorbent Assay (ELISA) in this precise and sensitive antibody-based detection kit. Experiment components do not contain human serum.

Complete in 45 min.

Storage: Some Components Require Refrigerator Storage Upon Receipt.

CLICK HERE **For Experiment #269 Components and Requirements.**

Cat. #267

Single Antibody ELISA Diagnostics

Newly Updated!

For 10 Groups. Teach your students the ELISA technique in less than half the time of traditional ELISAs! This experiment eliminates the need for the primary and secondary antibody normally needed for ELISAs because the detection antibody has an enzyme linked to it directly. Simply add substrate to discover which patient is infected.

Complete in 20 min.

Storage: Some Components Require Refrigerator Storage Upon Receipt.

CLICK HERE **For Experiment #267 Components and Requirements.**

Cat. #278

Quantitative ELISA

For 6 Groups. Now with NEW substrate! Antibodies are highly specific in their recognition of antigens. This ELISA experiment demonstrates the quantitation of varying concentrations of viral antigens as detected by the intensity of the color reaction due to the accumulation of products. This laboratory activity meets the requirements in the BSCS Blue Biology curriculum.

Complete in 2 hours.

Storage: Some Components Require Refrigerator Storage Upon Receipt.

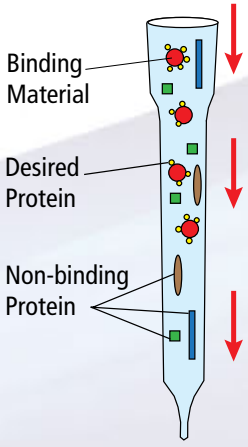
CLICK HERE **For Experiment #278 Components and Requirements.**

Cat. #277

Affinity Chromatography of Glucose Binding Proteins

EDVOTEK® exclusive!

For 10 Groups. In this experiment, students will prepare a seed extract from Jack Bean Meal, fractionate the extract by affinity chromatography, and elute the bound glucose binding protein. The presence of biological activity is determined by an immunoblot enzyme assay.



Complete in 2 hours.

Storage: Some Components Require Refrigerator Storage Upon Receipt.

CLICK HERE **For Experiment #277 Components and Requirements.**

BEST SELLER

Cat. #270

Antigen-Antibody Interaction: The Ouchterlony Procedure

EDVOTEK® exclusive!

For 10 sets of reactions. Introduce your students to the principles of antigen-antibody interactions by using the Ouchterlony procedure. Antibodies and antigens form complexes that precipitate, making it possible to assay antibody-antigen systems. The binding interaction results in the formation of distinct white precipitate patterns after diffusion in agarose.

Storage: Some Components Require Refrigerator Storage Upon Receipt.

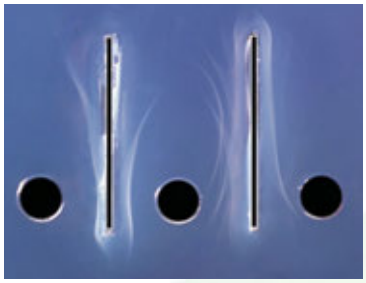
CLICK HERE For Experiment #270 Components and Requirements.

Set up 35 min.
Incubation overnight

Cat. #272

Immunoelectrophoresis

EDVOTEK® exclusive!



For 10 separations. Learn how immunoelectrophoresis identifies proteins based on their combined electrophoretic and immunological properties. This method is useful to monitor antigen and antigen-antibody purity and to identify a single antigen in a mixture of antigens. In this experiment, serum proteins are separated by agarose gel electrophoresis and the point of equivalence is observed by the antigen-antibody complex formation.

Storage: Some Components Require Refrigerator Storage Upon Receipt.

CLICK HERE For Experiment #272 Components and Requirements.

Electrophoresis 60 min.
Incubation overnight

BEST SELLER

Cat. #273

Radial Immunodiffusion

EDVOTEK® exclusive!

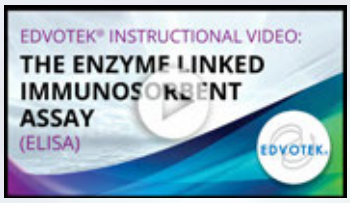
For 10 quantifications 6 reactions each. Radial immunodiffusion quantitatively determines the level of an antigen. Antibody is incorporated into liquefied agar and allowed to gel. The antigen is added to small wells and radiates throughout the antibody-containing medium, leaving a precipitate throughout the gel. The amount of diffusion is quantified.

Storage: Some Components Require Refrigerator Storage Upon Receipt.

CLICK HERE For Experiment #273 Components and Requirements.

Set up 35 min.
Incubation overnight

Check Out Our Related Video:



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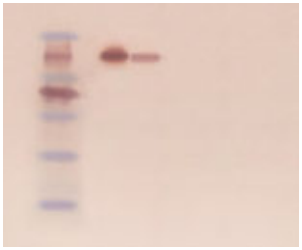
Cat. #317

Western Blot Analysis
(Polyacrylamide-based)



For 6 Blots. In Western blot analysis, protein identification is based on antibody and antigen reactions. Proteins are separated on polyacrylamide gels and are transferred (blotted) to a nylon membrane. The membrane is exposed to solutions containing primary antibody, followed by a secondary antibody coupled to an enzyme. The membrane is then soaked in a substrate solution to develop the color reaction, which results in identification on the antigen protein band. The molecular weights of the visible bands are measured using prestained protein markers of known molecular weight. This kit does not require an electrotransfer apparatus.

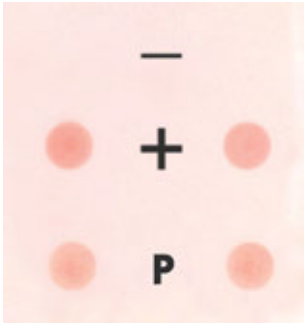
Storage: Some Components Require Refrigerator Storage Upon Receipt.

CLICK HERE For Experiment #317 Components and Requirements.

Electrophoresis 60 min.
Blot overnight
Detection 2.5 hours

Cat. #276

Clinical Diagnostic Immunoblot



For 10 Groups. The immunoblot technique is used to determine the presence of an antigen. Clinical diagnostic kits employ the principles of the dot blot. In this experiment, antigens are absorbed to a membrane that is then treated with an antigen-specific antibody solution and then a secondary antibody conjugated to an enzyme. The enzyme-substrate reaction generates a color product that precipitates onto the membrane, indicating a positive reaction. No human serum is used in this experiment.

Storage: Some Components Require Refrigerator Storage Upon Receipt.

CLICK HERE For Experiment #276 Components and Requirements.

Set up 45 min.
Experiment 1.5 - 2 hrs.

NEW EDVOTEK® At Home FREE Online Resources

Edvotek® at Home is a set of resources to teach the basics of Edvotek's labs through worksheets and presentations. While we believe in the importance of hands-on learning, these free online learning tools are ideal if you can not perform the hands-on experiments in class.

Topics Include: Cancer Gene Detection, The ELISA Assay, and Much More!

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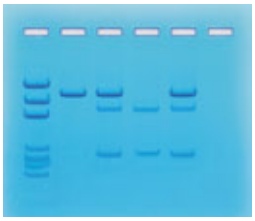
Cat. #115

Cancer Gene Detection



For 8 Gels. Immortality through uncontrolled cell division is a characteristic of cancer cells. The p53 gene is a tumor suppressor gene which prevents this. Mutations in this gene are present in more than 50% of cancers. Testing people for mutations in their p53 gene can indicate an increased risk in developing cancer. These tests raise intriguing ethical questions for both the individual tested and the family of an individual who chooses to be tested. In this experiment, students determine a pedigree for a family suspected to be carriers of mutations in their p53 genes. A DNA test indicates their likelihood of developing cancer.

Complete in 45 min.

Storage: Room temperature stable. Storage of Ready-to-Load QuickStrip™ samples in the refrigerator is recommended.

CLICK HERE For Experiment #115 Components and Requirements.

Cat. #141

Blood-based Cancer Diagnostics

For 10 Groups. Cancer cells differ from normal cells by the combinations of proteins that are present on their surfaces. Antibodies against these proteins will specifically bind to cancer cells and not to normal cells. This allows early detection of cancer and potentially a way of delivering cancer therapies. In this simulation experiment, the reaction of cancer cell markers and their corresponding antigens are demonstrated.

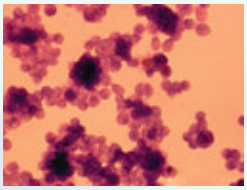
Complete in 35 min.

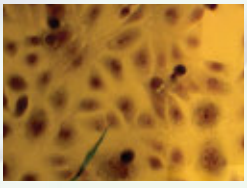
Storage: Room Temperature.

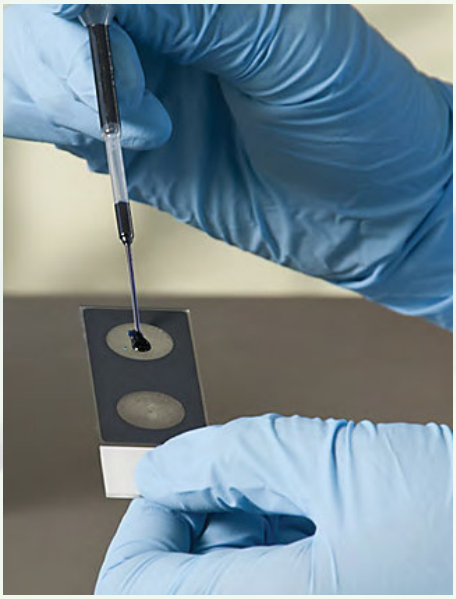
CLICK HERE For Experiment #141 Components and Requirements.

Cat. #990

Morphology of Cancer Cells







For 6 Groups. When normal cells are grown in culture they stop growing when they become overcrowded. This is called contact inhibition. Cancer cells in culture grow in an uncontrolled way because they have lost this property. This helps tumors to form in the body. In addition, many different cell types can be present in a single tumor. This experiment allows students to see the differences between normal and cancer cells in both their growth and cell types.

Complete in 35 min.

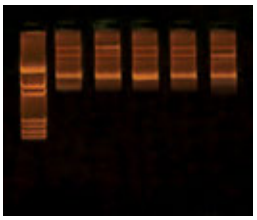
Storage: Room Temperature.

CLICK HERE For Experiment #990 Components and Requirements.

NEW

Cat. #957

Blinded by the Light: UV Rays and DNA Damage



For 10 Groups. In this experiment, students directly observe the effects of UV light on DNA. Students will run a time series test comparing UV exposed plasmid samples and examine their results using electrophoresis. Students may also test the ability of different sunscreens to prevent DNA damage.

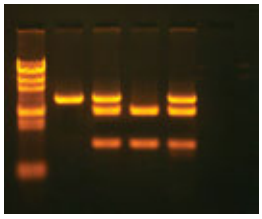
Complete in 2 hours.

Storage: Some Components Require Freezer Storage Upon Receipt.

CLICK HERE For Experiment #957 Components and Requirements.

Cat. #314

In Search of the Cancer Gene



For 6 Groups. Suppressor genes such as p53 are essential for cell functions. Mutations in the p53 gene can be correlated to predisposition for certain cancers. Mutations in genes can either be inherited or accumulated due to environmental insults. This experiment deals with a family pedigree determination of several generations relating to cancer formation due to p53 gene mutation. This experiment does not contain human DNA.

Complete in 1 hour.

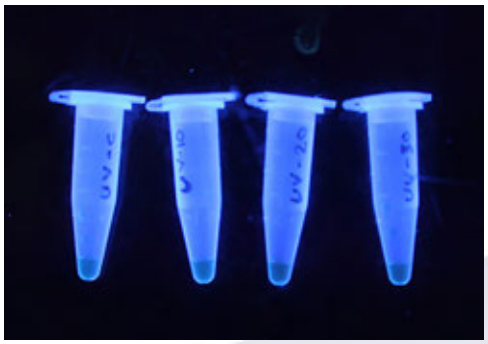
Storage: Some Components Require Refrigerator Storage Upon Receipt.

CLICK HERE For Experiment #314 Components and Requirements.

NEW

Cat. #381

Break Through! Testing DNA Damage Using Quantitative PCR



For 4 Groups. The integrity and stability of DNA is essential to life. However, everyday this molecule is under assault from environmental stressors like UV radiation, mutagenic chemicals, and even normal metabolic processes. In this guided inquiry lab students will use the cutting edge technology of QPCR to investigate and quantify DNA damage due to physical (UV radiation) or chemical (DNAseI) disruptions. By designing and performing the experiments students will master advanced analytical and technical skills as well as deepen their understanding of key molecular biology and medical concepts.
This kit must be used with a RT (qPCR) Thermal Cycler.

Storage: Some Components Require Freezer Storage Upon Receipt.

CLICK HERE For Experiment #381 Components and Requirements.

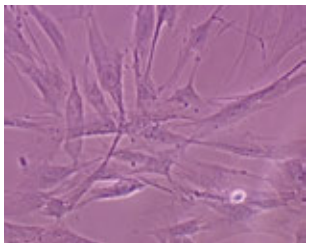
DNA Damage - 45 min.
qPCR Setup 45 min.
qPCR - 90 min.
Electrophoresis - 60 min.
Staining - 5 min. to overnight
Analysis - 45 min.

BEST SELLER

Cat. #986

Comparison of Mammalian Cell Types

35 min.

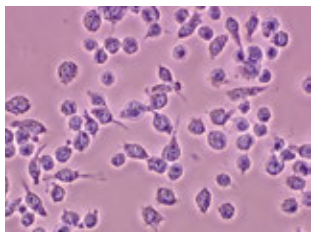


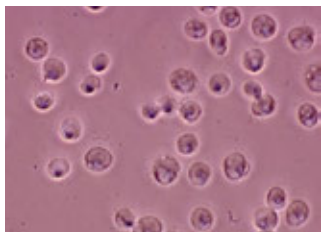
For 6 Groups. Your students will be amazed at the differences they observe between various mammalian cell types and how these cells function. Cells are fixed on microscope slides and students stain the cells on the slide to view morphological characteristics of the cell types. These cells are fixed and very safe for classroom use.

Complete in 35 min.

Storage: Room Temperature.

CLICK HERE For Experiment #986 Components and Requirements.



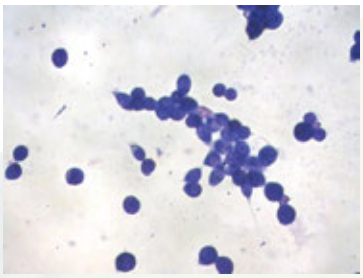


Cat. #1001

Eukaryotic Cell Biology

Supported by NCMHD grant R43 MD005202 from the National Center on Minority Health and Health Disparities.

For 6 Groups. Cell Culture is a vital technology used in life science research and in biotechnology laboratories. The study of basic cell biology, diseases and cancer, the development and testing of new therapeutics, and the production of new drugs relies on using the techniques introduced in this experiment. Students will learn how to grow eukaryotic cells in culture, basic cell staining and how to count cells. The techniques used in these experiments will provide the student with a skill set desired in both academic research and industry.



Storage: Some Components Require Refrigerator Storage Upon Receipt.

CLICK HERE For Experiment #1001 Components and Requirements.

Basic cell culture techniques	30 min.
Examination of Insect Cell Cultures	30 min.
Maintenance of Insect Cell Cultures	1 hour
Cell viability using trypan blue	30 min.
Differential staining using giemsa stain	Overnight

IMPORTANT:

- *Kit #1001 contains LIVE materials which must be requested 2 weeks prior to day of the lab.*
- *Culturing of cells is required upon receipt.*
- *Additional medium may be required if culturing of cells multiple times or if the experiment is not performed within 3 days upon receipt.*

ALSO Available:

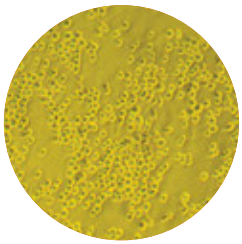
Cat. #1120

Insect Cell Media, 120 mL

NEW

Cat. #1002

Cell Culture Toxicity Screening



For 6 Groups. Toxicity screening is a powerful technique that allows scientists to determine the effect of potentially harmful substances on living cells. In this inquiry-based lab, students will plan and implement a toxicity screening experiment using insect cell culture. The results will be analyzed to determine cell viability and to estimate the LD50 of the toxic solution.

Kits contains LIVE materials which must be requested 2 weeks prior to day of the lab. Culturing of cells is required upon receipt. Additional medium may be required if culturing of cells or if the experiment is not performed within three days upon receipt.

Module I: 15 min.
Module II: 15 min.
Module III: PreLab: 5 min., Experiment: 15 min.
Module IV: PreLab: 20 min., Experiment: 30 min., Overnight Incubation
Module V: PreLab: 20 min., Experiment: 60-90 min.

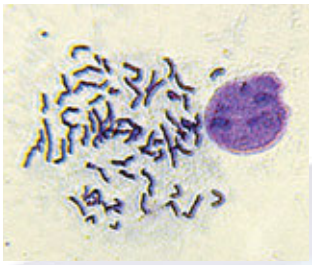
Storage: Some Components Require Refrigerator Storage Upon Receipt.

CLICK HERE For Experiment #1002 Components and Requirements.

Cat. #987

Chromosome Spread
(Pre-Fixed Slides)

For 6 Groups. During mitosis, each of our chromosomes is duplicated. The chromosomes are then separated during mitosis, moving to opposite ends of the cell before cell division. In this experiment, cells have been arrested during metaphase and fixed to slides, allowing students to stain and observe the condensed chromosomes. Students will develop an understanding of karyotyping and the association of chromosomal abnormalities with diseases.



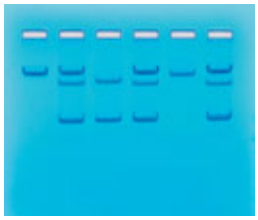
Complete in 35 min.

Storage: Room Temperature.

CLICK HERE For Experiment #987 Components and Requirements.

Cat. #116

Sickle Cell Gene Detection
(DNA-based)



For 8 Gels. Sickle Cell Anemia is a common genetic disease that causes misshapen red blood cells, giving them a "sickled" appearance. These cells get stuck in small capillaries of the blood stream leading to oxygen deprivation which causes pain and organ damage. Sickle Cell Anemia is caused by a single point mutation in the hemoglobin gene that results in a faulty protein. In this experiment, your students will investigate the restriction enzyme that discriminates between HbA (normal) and HbS (disease) genes and perform a simulated test on patients or a "family."

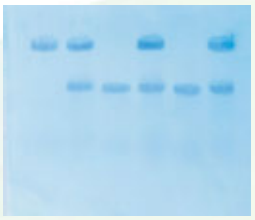
Complete in 45 min.

Storage: Room temperature stable. Storage of Ready-to-Load QuickStrip™ samples in the refrigerator is recommended.

CLICK HERE **For Experiment #116 Components and Requirements.**

Cat. #315

In Search of the Sickle Cell Gene by Southern Blot



For 5 Groups. Southern blotting is an important technique widely used in clinical genetics and research. By transferring DNA from an agarose gel onto a membrane, the method allows you to analyze and identify the DNA bands on a gel precisely. Students will use Southern blotting to find a point mutation in the hemoglobin gene indicating Sickle Cell Anemia.

Storage: Some Components Require Refrigerator Storage Upon Receipt.

CLICK HERE **For Experiment #315 Components and Requirements.**

Electrophoresis 45 min.
Blotting overnight
Staining & destaining 10 min.

BEST SELLER

Cat. #118

Cholesterol Diagnostics

For 8 Gels. Elevated blood cholesterol has been established as a serious risk factor for coronary heart disease and stroke which are leading causes of death in the United States. An inherited disorder, known as "familial hypercholesterolemia" (FH), causes an increase in blood levels of the "bad" form of cholesterol, known as low density lipoprotein (LDL). In this experiment, students will carry out a simulated genetics test for FH by analyzing patients' DNA polymorphisms.

Complete in 45 min.

Storage: Room temperature stable. Storage of Ready-to-Load QuickStrip™ samples in the refrigerator is recommended.

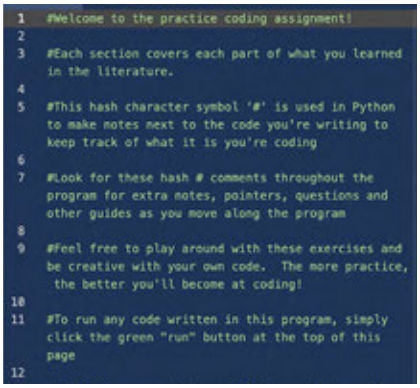
CLICK HERE **For Experiment #118 Components and Requirements.**

NEW

Cat. #342

Learn to Code! Introduction to Python for Detecting Disease

DISTANCE LEARNING

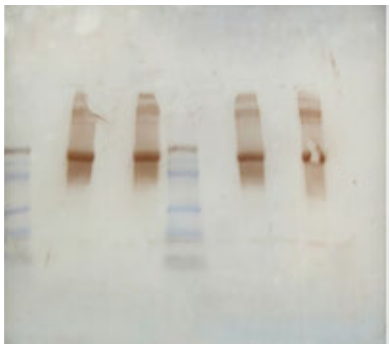


For Any Group Size! Bioinformatics is a field dedicated to biological data analysis; an interface between computers and human health. Scientists use powerful computers to create simulations of biological activity and process large data sets, making large and complex data sets easy to understand and analyze. In this experiment, students will learn how bioinformaticians process gene data, how they make sense of gene behavior, and what happens genotypically when a mutation occurs in a DNA sequence. First, students will be introduced to the basics of the coding language Python, and will then use these skills to identify a SNP in a simulated patient's DNA. No previous knowledge of coding necessary. *All you need is a computer with internet access!*

NEW

Cat. #1115

Detecting Risk Factors for Alzheimer's Disease Using Western Blot



For 10 Groups, with 2 Groups sharing a gel. The objective of this experiment is for students to understand the theory and application of western blotting. Students will perform a western blot to determine simulated clinical trial participants' risk of developing Alzheimer's Disease.

Storage: Some Components Require Refrigerator Storage Upon Receipt.

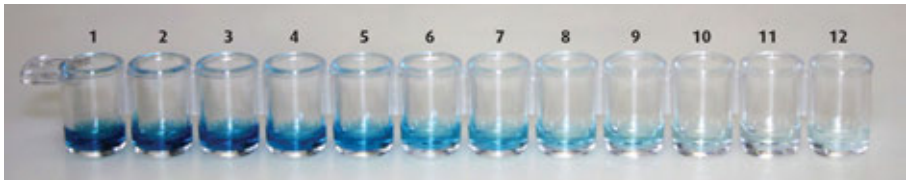
CLICK HERE For Experiment #1115 Components and Requirements.

NEW

Cat. #1116

Researching Alzheimer's Disease by ELISA

For 10 Groups. In this experiment, students will become neuroscientists searching for Alzheimer's Disease biomarkers. Students will explore potential biomarkers by analyzing simulated patient samples from control and Alzheimer's Disease populations.



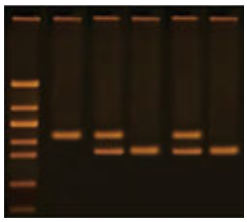
Storage: Some Components Require Refrigerator Storage Upon Receipt.

CLICK HERE For Experiment #1116 Components and Requirements.

NEW

Cat. #1125

Diagnosing Huntington's Using PCR



For 5 Complete Sets of Reactions. In this experiment, students will conduct a DNA fingerprinting exercise on simulated patient samples to determine if family members are heterozygous or homozygous for Huntington's Disease. Students will then analyze the amplified DNA segments by agarose gel electrophoresis.

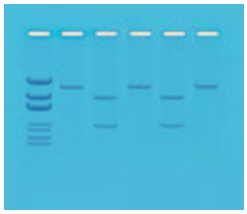
Storage: Some Components Require Freezer Storage Upon Receipt.

CLICK HERE For Experiment #1125 Components and Requirements.

NEW

Cat. #135

Using CRISPR to Treat Cystic Fibrosis



For 8 Gels/8 Lab Groups. In this experiment, students will simulate the use of CRISPR-Cas9 to target a genetic mutation found in a patient suffering from Cystic Fibrosis. Students will develop an understanding of guide RNA (gRNA) design, and use agarose gel electrophoresis to examine pre-prepared DNA samples after CRISPR treatment.

Complete in 45 min.

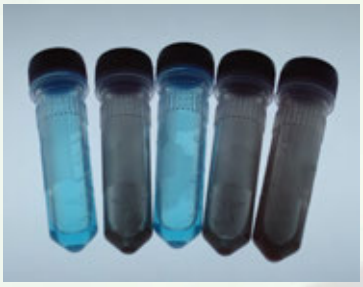
Storage: Room temperature stable. Storage of Ready-to-Load QuickStrip™ samples in the refrigerator is recommended.

CLICK HERE For Experiment #135 Components and Requirements.

QuickStrips™

Cat. #280

Detecting the Silent Killer: Clinical Diagnosis of Diabetes



For 10 Groups. Over 380 million people worldwide are afflicted by diabetes mellitus, a chronic disease that leads to high blood sugar. Due to genetic predisposition and high-calorie, low-activity lifestyles, that number continues to grow. Without early detection and treatment of diabetes, severe medical complications can occur. In this simulation, students will diagnose diabetes in three patients using the urine glucose test and Enzyme-linked Immunosorbent Assay (ELISA).

Urine glucose dipstick

	Negative
1/10	100 mg/dL
1/4	250 mg/dL
1/2	500 mg/dL
1	1000 mg/dL
2 +	2000 mg/dL

Complete in 90 min.

Storage: Some Components Require Refrigerator Storage Upon Receipt.

CLICK HERE For Experiment #280 Components and Requirements.

Cat. #S-68

What is an Epidemic and How Does An Infection Spread?

For 10 Groups. Infectious agents such as bacteria & 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.

- Explore how bacteria & viruses spread through a population
- Use clear solutions and a color-changing indicator to model a classroom infection
- Record potential infection events and practice contract tracing
- Discuss different types of infections and different detection techniques

Complete in 30 min.

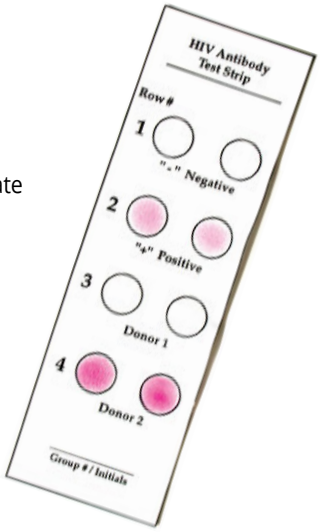
Storage: Room Temperature.

CLICK HERE For Experiment #S-68 Components and Requirements.

Cat. #S-70

How Does a Doctor Test for AIDS?

INTRO



For 10 Groups. Your body defends itself from attack by infectious agents like bacteria & viruses by producing antibodies. Enzyme Linked Immunosorbent Assays (ELISA) test for antibodies present in the blood, which indicate infection. In this kit, students perform a simulated ELISA test to identify infected samples & compare them to control samples.

Complete in 45 min.

Storage: Room Temperature.

CLICK HERE For Experiment #S-70 Components and Requirements.

Cat. #166

Detection of a Simulated Infectious Agent

INTRO

For 25 Students. An infectious outbreak requires prompt & accurate identification of the biological agent. Often, early clinical symptoms are first identified in exposed individuals & then infectious agents are determined by lab tests. In this kit, students will transmit a simulated infectious agent (chemical dye) between classmates. The simulated infections agent is only visible under long-wave UV light. The pattern of transmission and primary source will be documented. *NGSS-aligned with MS-LS2.C*

Complete in 30-45 min.

Storage: Room Temperature.

CLICK HERE For Experiment #166 Components and Requirements.

Requires in 30-45 min.

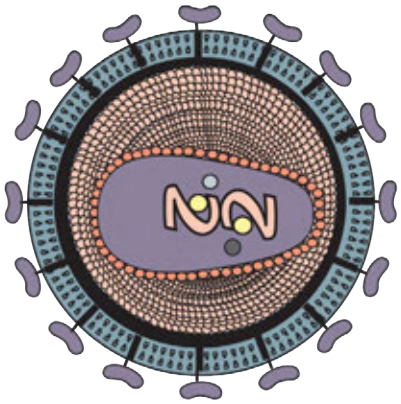
BEST SELLER

Cat. #271

AIDS Kit I: Simulation of HIV Detection by ELISA

Requires 1 hour.

For 10 Groups. An HIV test detects HIV infection indirectly using an ELISA test against HIV antibodies in the blood. The test works by taking antibodies from the patient's blood and adding them to a microtiter plate coated with HIV antigen. If HIV antibodies are present in the blood, they will bind to the antigens on the plate. This binding is detected with an enzyme-linked secondary antibody that causes a color change upon addition of substrate. In this experiment, your students will perform an ELISA test by coating microtiter plate wells with simulated HIV antigen and then test simulated donor serum for anti-HIV antibodies.



Storage: Some Components Require Refrigerator Storage Upon Receipt.

CLICK HERE **For Experiment #271 Components and Requirements.**

Cat. #275

AIDS Kit II: Simulation of HIV Detection by Western Blot

For 6 Groups. One assay used to confirm a positive HIV ELISA result is the Western Blot. Students separate protein samples from hypothetical patients on agarose gels, transfer the samples to a membrane and detect the simulated HIV proteins. This kit is an introductory level experiment. For a comprehensive advanced course, we recommend Cat. #317.

Electrophoresis 45 min.
Blot overnight
Detection 25 min.

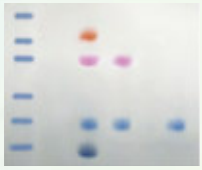
Storage: Some Components Require Refrigerator Storage Upon Receipt.

CLICK HERE **For Experiment #275 Components and Requirements.**

Cat. #151

AIDS Kit III: Simulation of HIV Detection by Protein Electrophoresis

For 6 Groups. The Human Immunodeficiency Virus (HIV) causes acquired immune deficiency syndrome (AIDS), a serious disease that suppresses a patient's immune system which leaves them susceptible to infections. In this experiment, students will use SDS-PAGE to simulate the identification of HIV proteins in simulated patient samples. The results of this test are used to diagnose an HIV infection.



Electrophoresis 60 min.
Staining/destaining (optional) 2 hours.

Storage: Some Components Require Freezer Storage Upon Receipt.

CLICK HERE **For Experiment #151 Components and Requirements.**

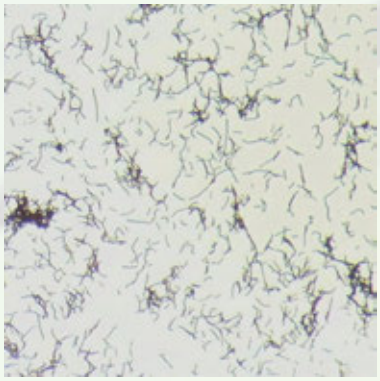
NEW

Cat. #160

Identification and Characterization of Bacteria

Complete in 90 min.

For 8 Groups. Gram staining is a quick, effective, and medically relevant identification test that has become one of the most essential tools in bacterial classification. In this experiment, students will use this staining technique to examine the size, shape, arrangement, and gram status (+/-) of *Escherichia coli, Bacillus subtilis,* and *Micrococcus luteus*.



Storage: Some Components Require Refrigerator Storage Upon Receipt.

CLICK HERE **For Experiment #160 Components and Requirements.**

Cat. #S-49

In Search of My Father

For 10 Gels/10 Lab Groups. 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 it be a happy ending?

Complete in 35 min.

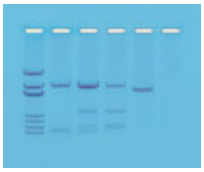
Storage: Room temperature stable. Storage of Ready-to-Load QuickStrip™ samples in the refrigerator is recommended.

CLICK HERE **For Experiment #S-49 Components and Requirements.**

Cat. #114

DNA Paternity Testing Simulation

For 8 Gels/8 Lab Groups. 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. The experiment does not contain human DNA.



Complete in 45 min.

Storage: Room temperature stable. Storage of Ready-to-Load QuickStrip™ samples in the refrigerator is recommended.

CLICK HERE **For Experiment #114 Components and Requirements.**

Cat. #279

Investigating Human Health Using the ELISA

For 10 Groups. In this experiment, students will perform an Enzyme-Linked Immunosorbent Assay (ELISA) to examine the impact of this powerful test on human health. Antibodies will be used to detect minuscule amounts of antigens and determine the status of simulated samples. Three different scenarios can be explored, including pregnancy testing, early detection of heart attacks, and identification of gluten in food products.

Complete in 50 min.

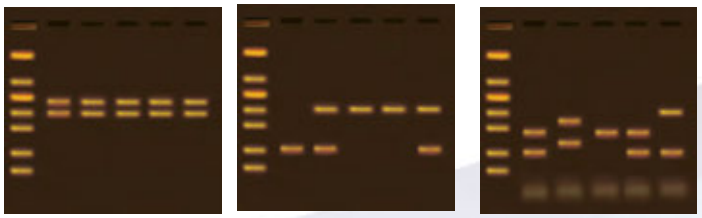
Storage: Some Components Require Refrigerator Storage Upon Receipt.

CLICK HERE **For Experiment #279 Components and Requirements.**

Cat. #369

Human PCR Toolbox™

For 25 Students. Carry out three PCR experiments in your class at once! This kit provides three sets of primers to carry out the PCR amplification of Alu element (PV92) on chromosome 16, the VNTR locus (D1S80) on chromosome 1, and two regions of the mitochondrial gene. For 6 runs of each PCR reaction.



Storage: Some Components Require Freezer Storage Upon Receipt.

CLICK HERE **For Experiment #369 Components and Requirements.**

Extraction - 50 min.
PCR Setup - 10 min.
PCR - 2 hours
Electrophoresis - 60 min.
Staining - 5 min. to overnight

NEW

Cat. #920

Safari Family Reunion

For 8 Gels/8 Lab Groups. In this lab, students will perform electrophoresis on the DNA samples of two lions in order to return them to wildlife sanctuaries close to their ancestral home.

- Learn how DNA is used to discover an individual's ancestry.
- Perform DNA electrophoresis and RFLP analysis.
- Analyze phylogenetic tree and haplotype maps.
- Explore how conservation biologists use genetic data.

Complete in 45 min.

Storage: Room temperature stable. Storage of Ready-to-Load QuickStrip™ samples in the refrigerator is recommended.

QuickStrips™

CLICK HERE For Experiment #920 Components and Requirements.

Cat. #207

Southern Blot Analysis

Electrophoresis 45 min.
Blotting overnight
Staining & destaining 10 min.

For 5 Groups. This experiment introduces your students to Southern blotting as a tool for "DNA Fingerprinting" in a hypothetical paternity determination. DNA fragments are first separated by agarose gel electrophoresis, then transferred to a nylon membrane and finally visualized by staining.

Storage: Some Components Require Freezer Storage Upon Receipt.

CLICK HERE For Experiment #207 Components and Requirements.

Cat. #311

DNA Fingerprinting by Southern Blot

Advanced Topic

For 5 Groups. In this experiment, students gain experience in non-isotopic DNA detection & the use of Southern Blot analysis in DNA fingerprinting for a hypothetical paternity test. Includes three modules: agarose gel electrophoresis, Southern Blot transfer, and non-isotopic detection of DNA. *Requires shipment on wet ice.*

Storage: Some Components Require Refrigerator & Freezer Storage Upon Receipt.

CLICK HERE For Experiment #311 Components and Requirements.

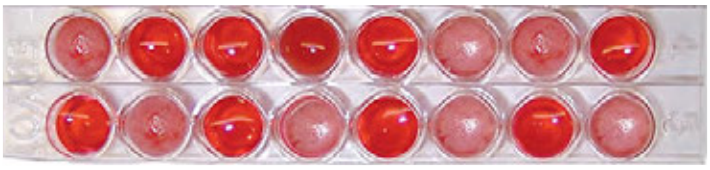
Electrophoresis 45 min.
Blotting overnight
Non-Isotopic Detection 3-4 hrs.

Cat. #140

Blood Typing

STEM

For 10 Groups. In human blood, there are two major antigens and antibodies designated as A or B and anti-A or anti-B. Blood type (A, B, AB, or O) can be determined using an agglutination assay where roughly equal concentrations of sample antigen and previously isolated antibodies are mixed and then monitored for precipitation. This test is often used to ensure safe blood transfusions. However, it can also be used in the field of forensics. Agglutination assays can confirm that collected evidence is human blood before more time intensive tests are performed. In addition, blood typing can screen potential suspects by blood group.



Complete in 2 hours

Storage: Room Temperature.

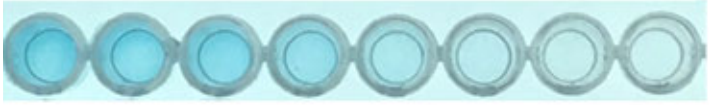
CLICK HERE For Experiment #140 Components and Requirements.

Replenisher Available:
Cat. #140-B Simulated Blood Samples and Serum ONLY.
For 10 Lab Groups.

Cat. #266

What's In My Lunch? Quantitative Food Allergy ELISA

For 10 Groups. 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.



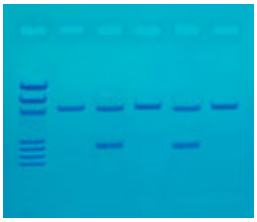
Storage: Some Components Require Refrigerator Storage Upon Receipt.

CLICK HERE For Experiment #266 Components and Requirements.

Cat. #122

Detection of the Influenza Virus

Complete in 90 min.



For 8 Gels. The influenza virus, or "the flu," is a common contagious disease that affects the respiratory system. In this simulation, students will perform two common tests (RIDT, RT-PCR) used to diagnose the flu in a clinical setting.

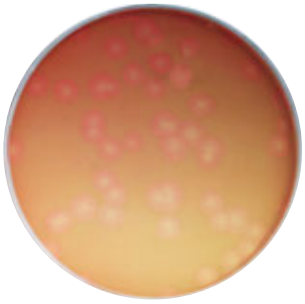
Storage: Room temperature stable. Storage of Ready-to-Load QuickStrip™ samples in the refrigerator is recommended.

CLICK HERE For Experiment #122 Components and Requirements.

Cat. #209

Going Un-Viral: Quantification Using Plaque Assays

Complete in 120 min.
Overnight Incubation



For 10 Groups. Although bacterial viruses, or bacteriophages, are present in many natural environments, they cannot survive autonomously. They require a host cell to reproduce and survive. In this experiment, students will learn about the different life cycles of bacterial viruses. They will then perform a viral plaque assay to indirectly visualize the viruses and to determine viral titer and multiplicity of infection (MOI).

Storage: Some Components Require Refrigerator Storage Upon Receipt.

CLICK HERE For Experiment #209 Components and Requirements.

BEST SELLER

Cat. #274

Identifying the Epstein Barr Virus Using ELISA

For 10 Groups. In this experiment, students will perform an enzyme-linked immunosorbent assay (ELISA) in order to screen simulated serum samples for antibodies to the Epstein Barr Virus (EBV) - a virus that causes most mononucleosis infections and that is associated with pediatric lymphomas.

Complete in 50 min.

Storage: Some Components Require Refrigerator Storage Upon Receipt.

CLICK HERE For Experiment #274 Components and Requirements.

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DISTANCE LEARNING

Cat. #EVT-086

Coronavirus Model

The outbreak of coronavirus (2019-nCoV) highlights the importance of understanding how such viruses infect us and how we can use this understanding to develop vaccines and medicines. Our model of the corona-virus causing coronavirus disease (COVID-19) shows its structure and what the different parts do.

DISTANCE LEARNING

Cat. #EVT-024

Zika Virus Model

With this exciting hands-on set, students make a model of the Zika virus. The model includes the protein capsid, lipid envelope, RNA genome and attachment proteins.

Discover *HUNDREDS* of Origami Organelle Models On Our Website!

10

Can Biotechnology Help the Environment?

Biotechnology and the environment are not usually associated in a positive way these days. However, the use of molecular biology techniques has rapidly improved environmental monitoring in recent years and biotechnology may help to solve some environmental problems in the future.

The sensitivity of molecular biology enables scientists to quickly and accurately identify both the type of contamination and its source, and whether it is microbial or man-made. For instance, use of Polymerase Chain Reaction (PCR) enables the identification of outbreaks of pathogens such as *E. coli* O157:H7 much more quickly than was possible using traditional microbiology techniques. Such methods could take days or even weeks to identify a pathogen and could never be sure to identify the source of contamination with complete accuracy. This has now all changed thanks to molecular biology.

Students can try both traditional and molecular techniques for analyzing contamination. In Kit #S-30 ***How Clean Is the Water We Drink and Air We Breathe***, your students can identify contamination using simple microbiology techniques. Kit #951 ***Chromogenic Analysis of Water Contaminants*** uses more sophisticated microbiological techniques and fluorescent dyes.

In parallel with the increased use of molecular techniques to detect and identify contamination and pollution, the same techniques are being developed to remove pollution once it has happened. Traditional methods to clean up oil spills with detergents cause almost as much harm as the oil itself. New methods using oil eating bacteria remove the oil without causing harm to the environment. Your students can try this for themselves with Kit #956 ***Bioremediation by Oil Eating Bacteria***.

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Here at EDVOTEK® we are consistently looking for ways to reduce waste, save energy, and provide you with new and improved products that are safer for you and better for the environment. From our staining techniques, to our packaging, to our Safety Data Sheets and experiment literature, we believe that it is through the small changes by many rather than grand actions by a few that will make the difference.

NEW

Cat. #920

Safari Family Reunion

For 8 Gels/8 Lab Groups. In this lab, students will perform electrophoresis on the DNA samples of two lions in order to return them to wildlife sanctuaries close to their ancestral home.

- Learn how DNA is used to discover an individual's ancestry.
- Perform DNA electrophoresis and RFLP analysis.
- Analyze phylogenetic tree and haplotype maps.
- Explore how conservation biologists use genetic data.

Complete in 45 min.

Storage: Room Temperature Stable. Storage of Ready-to-Load™ QuickStrip™ samples in the refrigerator is recommended.

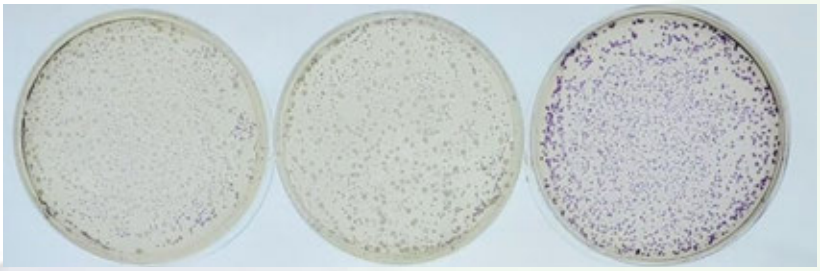
QuickStrips™

CLICK HERE For Experiment #920 Components and Requirements.

NEW

Cat. #935

Battling Bacteria: Ecosystem Dynamics in a Petri Dish



For 10 Lab Groups. In this experiment students create their own microbial ecosystems and investigate the dynamics of competition and abiotic/biotic change on community composition. By using bacteria with short generation times students can observe, test, and collect their own data on key ecological phenomena in a week!

- Understand niches, biotic/abiotic factors, and species interactions
- Create and manipulate a microbial ecosystem
- Investigate competition and test Gause's law
- Explore how different species respond to stress and environmental change.

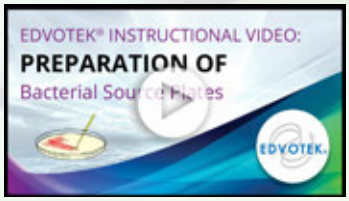
Complete in 1 week.

Storage: Some Components Require Refrigerator and Freezer Storage.

BactoBeads™

CLICK HERE For Experiment #935 Components and Requirements.

Check Out Our Related Videos:



NEW

Cat. #930

Invisible Footprints: Seeing Carbon Dioxide & Understanding Climate Change

For 20 Students. What would happen if each person was in charge of their own personal atmosphere? In this colorful experiment, students actually are! Explore the global carbon cycle and climate change in a simple, positive, and intimate way. Ideal for the middle school classroom.

- Introduce students to the carbon cycle, greenhouse effect, and climate change
- Create personal and class atmospheres that engage and empower students
- Examine, calculate, and "emit" each student's carbon footprint. Visualize the result!
- Find solutions by combining positive "handprint" actions and visualize these results!

Complete in 1 week (1-1.5 hours total lab time)

Storage: Room Temperature.

CLICK HERE **For Experiment #930 Components and Requirements.**

Check Out Our Related Video:

NEW

Cat. #161

How Clean is Clean? Testing the Effectiveness of Antibacterial Cleaners

For 10 Lab Groups. Microbes, including bacteria, are living organisms that are too small to be seen with the naked eye. In this lab, students will do two experiments to explore the properties of bacterial growth. First, they will determine a bacteria's ability to resist the antibiotic ampicillin, then they will test different household cleaners to determine which is most effective at preventing bacterial growth.

- Learn about helpful & harmful microbes, antibiotics, and antibiotic resistance
- Perform Kirby-Bauer disk tests
- Guided experiment to quantify the ability of bacteria to resist the antibiotic ampicillin
- Open-ended experiment to test the effectiveness of household cleaners

Complete in 2 lab periods (24 hours).

Storage: Some Components Require Refrigerator Storage.

CLICK HERE **For Experiment #161 Components and Requirements.**

DISTANCE LEARNING

NEW

MyLab™ Distance Learning

Looking for experiments ideal for distance learning? With MyLab™ kits from EDVOTEK®, you can plan your curriculum and have all the materials sent directly to your students!

MyLab™ #1301

How Clean is Our Home Environment?

- Learn about bacteria and where they are in your home.
- Experiment with household cleaners to see which are most effective at killing bacteria.
- Understand the relationship between bacteria and cleaning.

Kit Includes: petri dishes, agar, filter paper, and transfer pipettes.

MyLab™ #1930

Invisible Footprints

- Learn about the carbon cycle and climate change.
- Examine, calculate, and emit a carbon footprint then see the effects.
- Create a positive carbon handprint and see its effects.

Kit Includes: atmosphere & CO_2 powder, color change solution, mitigation solution, tubes, pipettes.

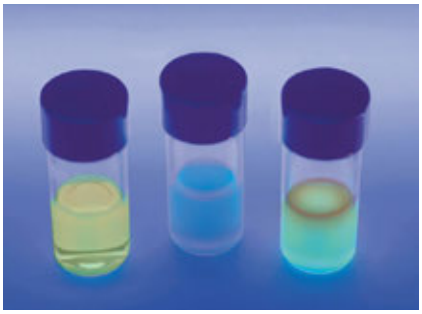
BEST SELLER

Cat. #951

Chromogenic Analysis of Water Contaminants

AP ENVIRONMENTAL

NIH Grant #SBIR-IR44-RR018670. Opinions expressed are those of the authors and not necessarily those of the NIH/NCRR.



For 10 Groups. 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.

Complete in 30 min. and grow overnight.

Storage: Some Components Require Refrigerator Storage.

CLICK HERE For Experiment #951 Components and Requirements.

BactoBeads™

PERFECT PARTNER

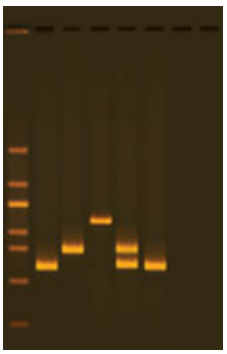
Cat. #969

Long Wave UV Mini Lamp

Cat. #953

Multiplex PCR-based Testing of Water Contaminants

AP ENVIRONMENTAL



For 25 Students. Drinking water is routinely tested for contamination. If a screening tests positive, more sophisticated tests are required. One such test uses PCR in multiplex format. In this experiment, students will test for the presence of three separate, classroom-safe organisms in a water sample using a single PCR reaction.

Extraction 60 min.
PCR Set Up 10 min.
PCR 2 hrs.
Electrophoresis 60 min.
Staining 5 min. to overnight

Storage: Some Components Require Refrigerator & Freezer Storage.

CLICK HERE For Experiment #953 Components and Requirements.

BactoBeads™

NIH Grant #SBIR-IR44-RR018670. Opinions expressed are those of the authors and not necessarily those of the NIH/NCRR.

PERFECT PARTNER

NEW

Cat. #5066

Personal PCR LabStation™

Includes: one EdvoCycler™ Jr. (Cat. #540), two M12 Complete™ Packages (Cat. #502-504), one QuadraSource™ Power Supply (Cat. #5010-Q), two 5 - 50 µL Variable Micropipettes (Cat. #590), one TruBlu™ 2 Transilluminator (Cat. #557), and one 1.8 L Water Bath (Cat. #539).

Cat. # 956

Bioremediation by Oil Eating Bacteria

BEST SELLER

AP ENVIRONMENTAL

After establishment of cultures, lab requires 50 min. (Can be done over several days or weeks.)

For 10 Groups. Oil spills cause devastation to the environment killing sea life, birds, and coastal plants. Spraying areas of contamination with oil-eating microbes accelerates the degradation of the oil. This process is known as bioremediation. In this open-ended experiment, students will grow a mixture of oil-eating bacteria and observe their effectiveness at degrading a variety of oils.

Storage: Some Components Require Refrigerator Storage.

CLICK HERE **For Experiment #956 Components and Requirements.**

Cat. #S-30

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

INTRO

For 10 Groups. 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 pollution. *NGSS-aligned with MS-LS1 and MS-LS2*

Complete in 30 min. and grow overnight

Storage: Room Temperature.

CLICK HERE **For Experiment #S-30 Components and Requirements.**

Cat. # 905

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

AP ENVIRONMENTAL

STEM

For 10 Lab Groups. 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 hazard of common point and non-point source pollutants. The results are analyzed using averages, standard deviations, and TC50 calculations, integrating STEM.

2 hours, 15 min. (plus 1 week growing).

Storage: Some Components Require Refrigerator and Freezer Storage.

CLICK HERE **For Experiment #905 Components and Requirements.**

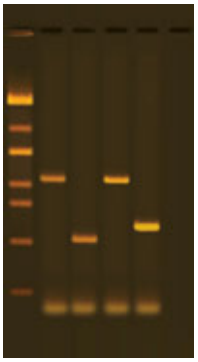
Cat. #338

Exploring Plant Diversity with DNA Barcoding

AP ENVIRONMENTAL

For 10 Groups. In this inquiry-based lab, your class will explore the genetic diversity of ten selected plants. Students will isolate plant DNA and use PCR to amplify two polymorphic regions of the chloroplast genome. Digestion of PCR products and analysis by agarose gel electrophoresis will then be used to generate unique identification profiles for each plant. *Requires shipment on wet ice.*

Extraction 2 hrs.
PCR Set Up 10 min.
PCR 2 hrs.
DNA Digest 60 min.
Electrophoresis 60 min.
Staining 5 min. to overnight



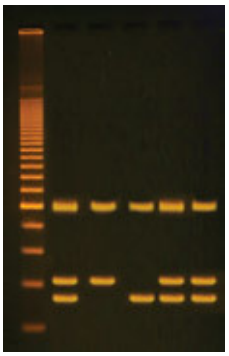
Storage: Some Components Require Freezer Storage Upon Receipt.

CLICK HERE **For Experiment #338 Components and Requirements.**

Cat. #962

Identification of Genetically Modified Foods Using PCR

AP ENVIRONMENTAL



For 10 Groups. Some foods contain raw materials from genetically modified organisms (GMO). Examples include tofu, corn flakes and corn meal. In this experiment, your students will extract DNA from food or plant material and perform PCR to determine if any GM indicator genes are present. Amplified DNA is separated and sized by agarose gel electrophoresis. *Requires 1 to 3 day shipping.*

Extraction 45 min.
PCR Set Up 10 min.
PCR 2 hrs.
Electrophoresis 60 min.
Staining 5 min.

Storage: Some Components Require Freezer Storage Upon Receipt.

CLICK HERE **For Experiment #962 Components and Requirements.**

Cat. #121

Detection of Genetically Modified Organisms

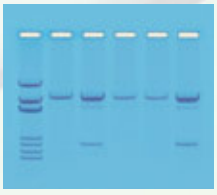
AP ENVIRONMENTAL

For 8 Gels/8 Lab Groups. For centuries, humans have used selective breeding and conventional hybridization to produce desirable qualities and to increase crop yields. Today, scientists use genetic engineering to directly manipulate the DNA, quickly producing these desirable traits. In this experiment, students will use agarose gel electrophoresis to explore the molecular methods used by scientists to identify genetically modified organisms. No thermal cycler is required. Students are also encouraged to explore the controversy surrounding the use of genetically modified organisms.

Complete in 45 min.

Storage: Room Temperature Stable. Storage of Ready-to-Load QuickStrip™ samples in the Refrigerator is Recommended.

CLICK HERE **For Experiment #121 Components and Requirements.**



Cat. # 851

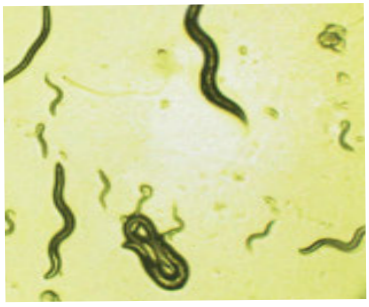
Effects of Alcohol on *C. elegans*

STEM

Growing Bacteria Overnight
Plating Worms 15 min.
Worm Growth 3-4 days
Alcohol Experiment 45-60 min.

For 10 Groups. You will not believe how similar we are to worms! The genome of the tiny worm, *Caenorhabditis elegans*, was sequenced and found to be 40% similar to us. It is now used as a model system by researchers to address fundamental questions in developmental biology, neurobiology and behavioral biology. The objective of this experiment is to observe and record the effects of alcohol on normal and alcohol mutant strains of *Caenorhabditis elegans*.

Kit contains LIVE materials which must be requested 2 weeks prior to lab.



Storage: Some Components Require Refrigerator Storage Upon Receipt.

CLICK HERE **For Experiment #851 Components and Requirements.**

NIAAA National Institute on Alcohol Abuse and Alcoholism

Supported by SBIR grant R44 AA 015026 from the National Institute on Alcohol Abuse and Alcoholism.

Check Out Our Related Videos:

Cat. # 852

Chemotaxis: The Science of Attraction in *C. elegans*

For 10 Groups. All organisms are affected by "scent" molecules in the environment, including a multicellular organism called *Caenorhabditis elegans*. These worms are composed of 959 somatic cells, of which 300 are neurons comprising organs for taste, smell, temperature and touch. In this experiment, your students will observe and record the phenomenon by which normal and mutant strains of *C. elegans* can direct their movement in response to certain chemicals in the environment.

Kit contains LIVE materials which must be requested 2 weeks prior to lab.

Storage: Some Components Require Refrigerator Storage Upon Receipt.

CLICK HERE **For Experiment #852 Components and Requirements.**

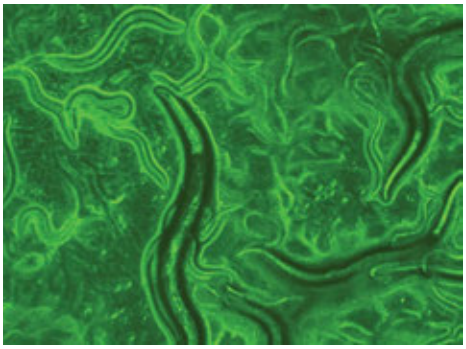
Growing Bacteria Overnight
Plating Worms 15 min.
Worm Growth 3-4 days
Chemotaxis Expt. 45-60 min.

Cat. #858

Lighting Up Life: Expression of GFP in *C. elegans*

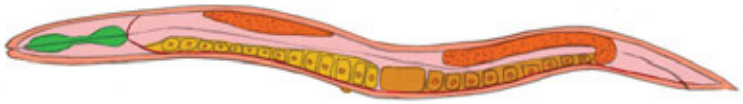
Growing Bacteria Overnight
Plating Worms 15 min.
Worm Growth 3-4 days
Set Up 30 min.
PCR 2 hours or overnight
Electrophoresis 90 min.

For 10 Groups. Scientists can directly manipulate an organism's genome to produce a phenotype using engineered genes called transgenes. In this experiment, students will use fluorescent microscopy and PCR to analyze *C. elegans* (nematodes) that have been engineered to express the Green Fluorescent Protein (GFP).



Storage: Some Components Require Refrigerator & Freezer Storage Upon Receipt.

CLICK HERE **For Experiment #858 Components and Requirements.**



Kit contains LIVE materials which must be requested 2 weeks prior to lab.

Cat. # 856

Environmental Toxicity Response in *C. elegans*

For 10 Groups. *Caenorhabditis elegans* is a soil nematode with great potential for educational research, partly because of its rapid (3-day) life cycle, small size (1.0-mm-long adult), and ease of laboratory growth cultivation. In this experiment, students will observe and compare the effects of heavy metals found in the environment on normal and mutant strains of *Caenorhabditis elegans (C. elegans)*.

Storage: Some Components Require Refrigerator Storage Upon Receipt.

CLICK HERE **For Experiment #856 Components and Requirements.**

Growing bacteria Overnight
Plating Worms 15 min.
Worm Growth 3-4 days
Toxicity Experiment 45-60 min.

Kit contains LIVE materials which must be requested 2 weeks prior to lab.

NIH Supported in part by NIH SBIR NCRR Grant.

NEW

Cat. # 1002

Cell Culture Toxicity Screening

STEM

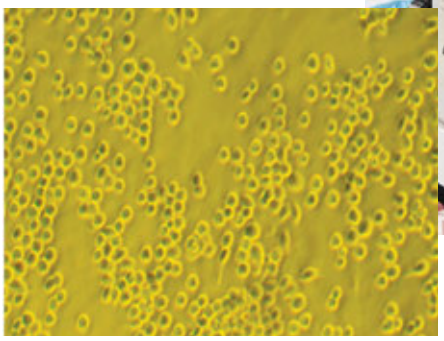
For 6 Lab Groups. Toxicity screening is a powerful technique that allows scientists to determine the effect of potentially harmful substances on living cells. In this inquiry-based lab, students will plan and implement a toxicity screening experiment using insect cell culture. The results will be analyzed to determine cell viability and to estimate the LD50 of the toxic solution.

Storage: Some Components Require Refrigerator Storage Upon Receipt.

CLICK HERE **For Experiment #1002 Components and Requirements.**

Module I	15 min.
Module II	15 min.
Module III	PreLab: 5 min. Experiment: 15 min.
Module IV	PreLab: 20 min. Experiment: 30 min. Overnight Incubation
Module V	PreLab: 20 min. Experiment: 60-90 min.

NOTE: Kit contains LIVE materials which must be requested 2 weeks prior to lab. Culturing of cells is required upon receipt. Additional medium may be required if culturing of cells or if the experiment is not performed within three days upon receipt.



ALSO AVAILABLE:

Cat. #1120

Insect Cell Media, 120 mL

Cat. #908

Introduction to Plant Cell Culture

Complete in 60 min. plus several weeks for growth

For 10 Groups. Genetic modification of plants is a highly controversial area of biotechnology. Experiments in plants begin with establishing plant cells in culture. This involves de-differentiating plant cells to form plant "stem cells". In this experiment, students will establish cell cultures of African Violets from leaves. They will then use plant growth regulators to encourage root growth from the cultured cells, and produce a mature plant.

Storage: Some Components Require Refrigerator Storage Upon Receipt.

CLICK HERE **For Experiment #908 Components and Requirements.**

Cat. #AP10

Energy Dynamics

STEM

AP BIOLOGY
INVESTIGATION 10

For 10 Groups. In this activity, students model how energy flows through a meadow ecosystem with an emphasis on the concepts of trophic levels and entropy. This is an alternative lab activity that does not require growing *Brassica rapa* or rearing the invasive pest, *Pieris rapae*. Following the exercise, students will be able to explain how biological systems use free energy, predict the effects of community changes on energy and nutrient flow, and apply mathematical equations to describe key abiotic and biotic interactions.

Requires 30-40 min.

FREE DOWNLOAD! CLICK HERE

Cat. #292

Dissolved Oxygen and Aquatic Primary Productivity

AP ENVIRONMENTAL

For 10 Groups. Dissolved oxygen levels are used to monitor the health and productivity of aquatic ecosystems. In this kit, students familiarize themselves with the Winkler method by examining the relationship between temperature and dissolved oxygen concentrations. Using local water samples to examine primary productivity at different water depths, students can then observe the beginning stages of eutrophication.

Requires 2 hours.

Storage: Room Temperature.

CLICK HERE **For Experiment #292 Components and Requirements.**

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DISTANCE LEARNING

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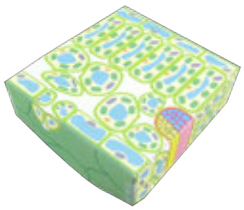
Cat. #EVT-113

Plant Cell Organization Model

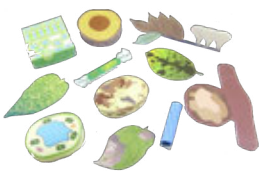


Cat. #EVT-034

Simple Plant Cell Model

Cat. #EVT-095

Plant Pathogens & Defenses Model



Cat. #EVT-601

Water Cycle Model

Cat. #EVT-604

Carbon Cycle Model

11

How Does SDS-PAGE Separate Proteins?

SDS polyacrylamide-gel electrophoresis, or SDS-PAGE, is a technique that is used to separate proteins according to their molecular weight.

Proteins produce a unique challenge for electrophoresis because they have complex shapes and different charges, which affect how they migrate through the gel. In order to accurately separate proteins by molecular weight and not by shape or charge, the secondary structure of the protein is unfolded using the anionic detergent sodium dodecyl sulfate (SDS) and a reducing agent. The SDS molecules form a complex with the protein, negating its inherent charge. The reducing agent breaks covalent bonds that link protein subunits.

After denaturation, the mixture of proteins is added into depressions (or "wells") within a gel, and then an electrical current is passed through the gel. Because the SDS-protein complex has a strong negative charge, the current drives the proteins through the gel towards the positive electrode. At first glance, a polyacrylamide gel appears to be a solid. On the molecular level, the gel contains channels through which the proteins can pass. Small proteins move through these holes easily, but large proteins have a more difficult time squeezing through the tunnels. Because molecules of different sizes travel at different speeds, they separate into discrete "bands" within the gel. After the current is stopped, the bands are visualized using a stain that sticks to proteins.

RELATED EQUIPMENT

Cat. #581

MV10 Vertical Electrophoresis Apparatus

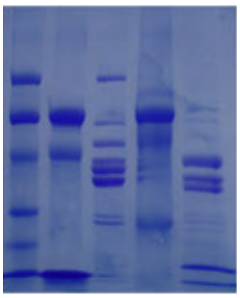
The latest in electrophoresis design! Our redesigned MV10 gel tank is designed for easy separation of proteins on polyacrylamide gels utilizing our unique gel support cassette clip. It allows gels to be easily inserted or removed and holds them in place securely. The MV10 unit holds one 9 x 10 cm gel cassette and can accommodate most precast polyacrylamide gels. For 1 or 2 Groups.

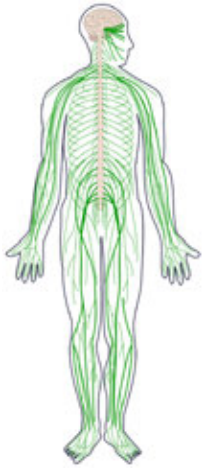
Features:
- Sleek New Design Improves Run Speed
- Improved Support Clip Holds Gel Securely
- Push Tabs for Easy Lid Insertion & Removal
- Color-Coded for Foolproof Setup
- Stabilizing Feet Improve Balance & Cooling
- US Design Patent No. D757,958
- Made in USA

NEW

Cat. #1110

Cell Types in the Brain





For 6 Groups Sharing 3 Polyacrylamide Gels. The brain is responsible for regulating almost everything within our body. It does this through a network of cells working together to function. The objective of the experiment is for st**udents to examine the** differences between cell types in the brain based on their profiles of proteins.

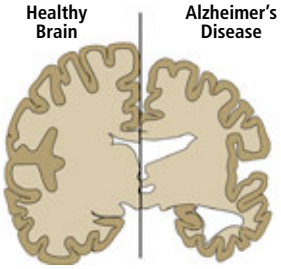
Storage: Some Components Require Freezer Storage Upon Receipt.

CLICK HERE **For Experiment #1110 Components and Requirements.**

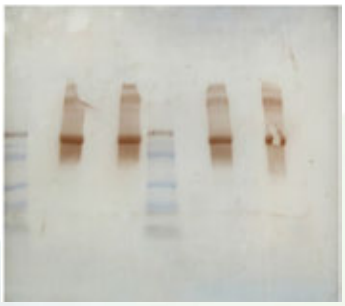
NEW

Cat. #1115

Detecting the Risk Factors for Alzheimer's Disease Using Western Blot



For 6 Lab Groups, With 2 Groups Sharing a Gel. The objective of this experiment is for students to understand the theory and application of western blotting. Students will perform a western blot to determine simulated clinical trial participants' risk of developing Alzheimer's Disease.



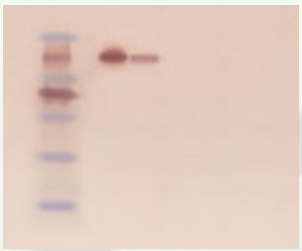
Storage: Some Components Require Refrigerator Storage Upon Receipt.

CLICK HERE **For Experiment #1115 Components and Requirements.**

Cat. #317

Western Blot Analysis
(Polyacrylamide-based)

Electrophoresis 60 min.
Blot overnight
Detection 2.5 hours



For 6 Groups. In Western blot analysis, protein identification is based on antibody and antigen reactions. Proteins are separated on polyacrylamide gels and are transferred (blotted) to a nylon membrane. The membrane is exposed to solutions containing primary antibody, followed by a secondary antibody coupled to an enzyme. The membrane is then soaked in a substrate solution to develop the color reaction, which results in identification on the antigen protein band. The molecular weights of the visible bands are measured using prestained protein markers of known molecular weight. This kit does not require an electrotransfer apparatus.

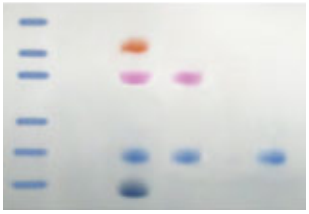
Storage: Some Components Require Refrigerator Storage Upon Receipt.

CLICK HERE **For Experiment #317 Components and Requirements.**

Cat. #151

Simulation of HIV Detection by Protein Electrophoresis *(Polyacrylamide-based)*

For 6 Groups sharing 3 gels. The Human Immunodeficiency Virus (HIV) causes acquired immune deficiency syndrome (AIDS), a serious disease that suppresses a patient's immune system which leaves them susceptible to infections. In this experiment, students will use SDS-PAGE to simulate the identification of HIV proteins in simulated patient samples. The results of this test are used to diagnose an HIV infection.



Electrophoresis 60 min.
Staining/Destaining Optional, 2 hours

Storage: Some Components Require Freezer Storage Upon Receipt.

CLICK HERE For Experiment #151 Components and Requirements.

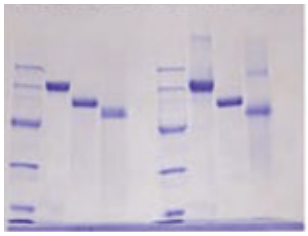
BEST SELLER

Cat. #153

Determination of Protein Molecular Weight

Electrophoresis 60 min.
Staining 20 min.
Destaining 2 hours

For 6 Groups sharing 3 gels. Using prestained LyphoProteins™, subunit molecular weights are determined by analysis using denaturing SDS vertical polyacrylamide gel electrophoresis. Prestained Proteins with unknown molecular weights are assigned molecular weights based on the relative mobility of prestained standard protein markers.



Storage: Some Components Require Freezer Storage Upon Receipt.

CLICK HERE For Experiment #153 Components and Requirements.

ALSO Available: Bulk Protein Samples LyphoProtein™ for 12 groups, Cat. #153-B

RELATED PRODUCTS

Precast Polyacrylamide Gels

Cat. #650 1 gel (4-20%)
Cat. #651 3 gels (4-20%)
Cat. #652 6 gels (4-20%)

Tris-glycine-SDS Powdered Buffer

For protein gel electrophoresis.
Cat. #655 For 5 L of 1X buffer

Tris-glycine Powdered Buffer

For protein gel electrophoresis.
Cat. #656 For 5 L of 1X buffer

Prestained Lyophilized Protein Standard Marker

Molecular Weight Standards
Cat. #752 For 6 gels

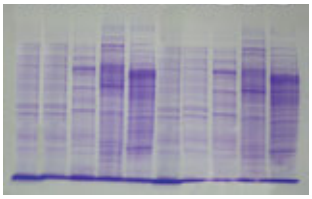
Cat. #2016

Protein InstaStain®

For 15 gels. Protein InstaStain® sheets stain gels faster than conventional methods. Protein InstaStain® gives high quality and uniform gel staining with excellent results for photography. They are also environmentally friendly because they use a solid matrix, avoiding large amounts of liquid stain and waste disposal. For staining gels of various sizes (ranging from 8 x 8 cm to 13 x 13 cm).

Cat. #252

Fingerprinting of Bacterial Proteins



For 6 Groups sharing 3 gels. In this experiment, total protein extracts from several bacterial sources are compared. The unique patterns of protein bands, obtained by SDS vertical polyacrylamide electrophoresis, can be used to identify various bacterial strains.

Storage: Some Components Require Freezer Storage Upon Receipt.

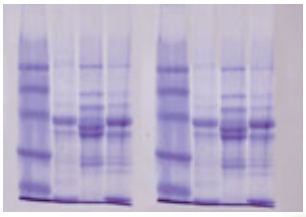
CLICK HERE For Experiment #252 Components and Requirements.

Day One Set Up 15 min.
Day Two Set Up 60 min.
Electrophoresis 60 min.
Staining 20 min.
Destaining 2 hours

Cat. #253

Diversity of Fish Proteins

Electrophoresis 60 min.
Staining 20 min.
Destaining 2 hours



For 6 Groups sharing 3 gels. Study the diversity of fish with these pre-stained, lyophilized proteins. Total protein from Perch, Walleye and Salmon have been extracted and pre-stained using an indicator dye. Each fish protein sample has a characteristic banding pattern when separated by denaturing SDS-polyacrylamide gel electrophoresis, which can be used to identify the specific species.

Storage: Some Components Require Freezer Storage Upon Receipt.

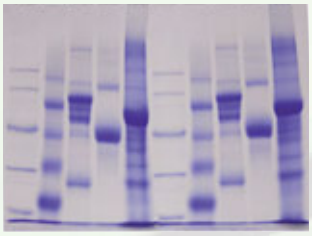
CLICK HERE For Experiment #253 Components and Requirements.

ALSO Available: Bulk Protein Samples LyphoProtein™ for 12 groups, Cat. #253-B

Cat. #150

Survey of Protein Diversity

Electrophoresis 60 min.
Staining 20 min.
Destaining 2 hours



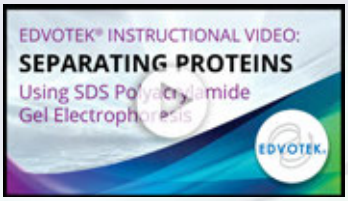
For 6 Groups sharing 3 gels. Learn about the diversity of proteins by studying the electrophoretic profiles of various sources. Your students will separate proteins from plant, animal serum, and milk proteins alongside a standard protein marker.

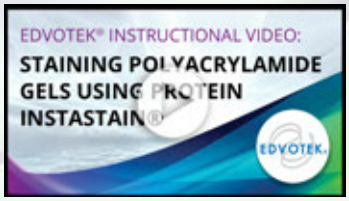
Storage: Some Components Require Freezer Storage Upon Receipt.

CLICK HERE For Experiment #150 Components and Requirements.

ALSO Available: Bulk Protein Samples LyphoProtein™ for 12 groups Cat. #150-B

Check Out Our Related Videos:



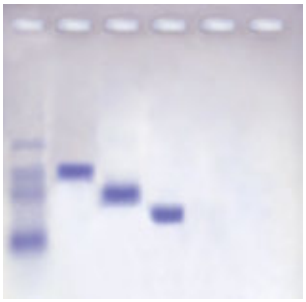


Cat. #110

Molecular Weight Determination of Proteins *(Agarose-based)*

Gel Prep 40 min.
Electrophoresis 60 min.

For 6 Groups. Introduce a simple method to determine protein subunit molecular weights using horizontal electrophoresis. Because the protein standards and "unknowns" are prestained, the separation of proteins can be observed during electrophoresis. Included in the experiment is EDVOTEK®'s formulation of protein grade agarose, which provides an alternative to the use of polyacrylamide gels.



Storage: Some Components Require Freezer Storage Upon Receipt.

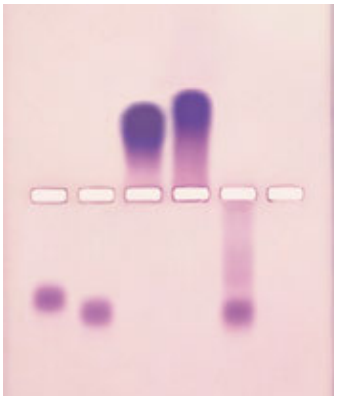
CLICK HERE For Experiment #110 Components and Requirements.

Cat. #111

Electrophoretic Properties of Native Proteins *(Agarose-based)*

Gel Prep 30 min.
Electrophoresis 45 min.
Staining 60 min.
Destaining overnight

For 6 Groups. Proteins are complex biomolecules with varying charge, size and shape that can be analyzed by agarose gel electrophoresis. Gel analysis of native proteins enables students to evaluate natural charge and shape characteristics of proteins. Following electrophoresis, the protein samples are stained for visualization.



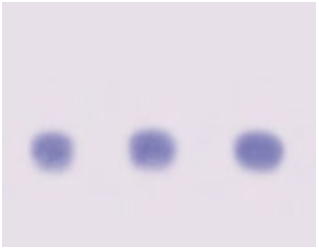
Storage: Some Components Require Refrigerator Storage Upon Receipt.

CLICK HERE For Experiment #111 Components and Requirements.

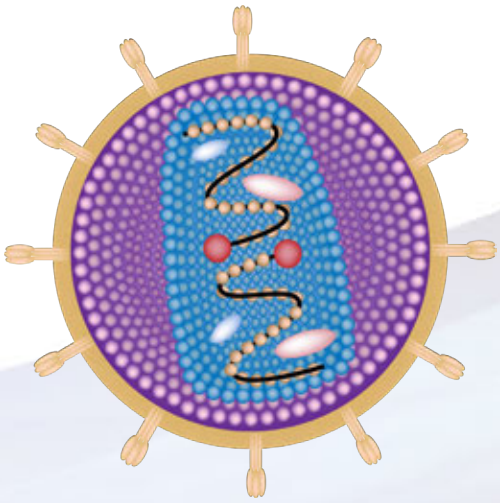
Cat. #275

Simulation of HIV Detection by Western Blot *(Agarose-based)*

Electrophoresis 45 min.
Blot overnight
Detection 25 min.



For 6 Blots. The second assay used to confirm a positive HIV ELISA result is the Western Blot. Students separate protein samples from hypothetical patients on agarose gels, transfer the samples to a membrane and detect the simulated HIV proteins. This kit is an introductory level experiment. For a comprehensive advanced course, we recommend Cat. #317.



Storage: Some Components Require Refrigerator Storage Upon Receipt.

CLICK HERE For Experiment #275 Components and Requirements.

Cat. #302

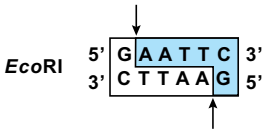
Purification of the Restriction Enzyme *Eco*RI

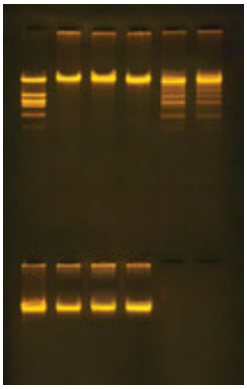
Advanced Topic

EDVOTEK® exclusive!

STEM

For 5 Purifications. In this experiment, students actually purify the restriction enzyme, *Eco*RI! This procedure utilizes an ion exchange chromatography step for *Eco*RI purification. Column fractions are assayed for the enzyme using Lambda DNA and digestion products are identified by agarose gel electrophoresis. Fractions that contain *Eco*RI are identified and pooled. The total and specific activities are calculated. *Recommended for college level courses.*





Storage: Some Components Require Freezer Storage Upon Receipt.

CLICK HERE **For Experiment #302 Components and Requirements.**

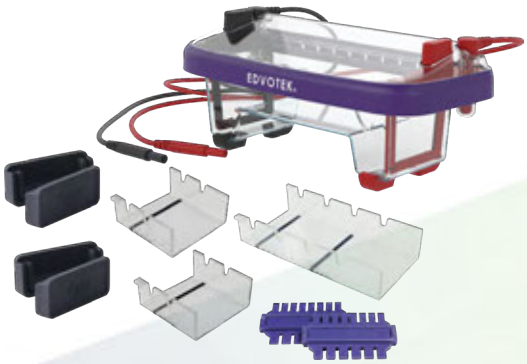
Packing column 45 min.
Restriction analysis A 35 min.
Restriction analysis B 50 min.
Gel Prep 30 min.
Electrophoresis 30 min.
Staining & Destaining 2 min.

PERFECT PARTNER

Cat. #502-504

M12 Complete™ Electrophoresis Package

For 1 or 2 Lab Groups. 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 15-30 minutes and includes a lifetime warranty.



Cat. #282

Principles of Enzyme Catalysis

Requires 30-45 min.

For 10 Groups. This easy and safe experiment allows your students to learn about enzyme catalysis, the nature of enzyme action and protein structure-function relationships. Students will perform an enzyme assay and determine the rate of the enzymatic reaction.

Storage: Some Components Require Refrigerator and Freezer Storage Upon Receipt.

CLICK HERE **For Experiment #282 Components and Requirements.**

BEST SELLER

Cat. #243

Ion Exchange Chromatography

STEM

For 6 Separations. Most molecules have a net charge within a pH range of 2 to 10. When the pH is altered, the net charge on molecules can change drastically. In this experiment, a mixture of two chemicals is absorbed onto a solid support ion-exchange column and separated during elution under conditions that influence their net charge.

Requires 60-90 min.

Storage: Room Temperature.

CLICK HERE For Experiment #243 Components and Requirements.

BEST SELLER

Cat. #108

Principles of Gel Filtration Chromatography

STEM

For 10 Groups. 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. Columns may be rinsed and reused.

Packing Column 20 min.
Column Separation 40 min.

Storage: Room Temperature.

CLICK HERE For Experiment #108 Components and Requirements.

RELATED PRODUCT

NEW

MyLab™ #1108

Exploring Gel Filtration Chromatography

Introduce chromatographic separation to your students! In this experiment, students separate dyes of different colors based on their size and shape. This experiment contains materials for dye separation which include dye sample, elution buffer and plastic disposables. Columns may be rinsed and reused.

- Understand and practice chromatography
- Explore how shape and size affect a molecule's behavior
- Separate colorful molecules using gel filtration chromatography
- Includes instructions, dye samples, matrix, buffer, pipettes, microtiter plate, chromatography column.

DISTANCE LEARNING

Cat. #255

Purification & Size Determination of Green & Blue Fluorescent Proteins

For 6 Groups. When bacteria are used to make medicinally useful proteins by transformation, the protein of interest must be separated from all of the other cellular proteins. In this experiment, the unique fluorescent properties of GFP and BFP will be used as an assay during their purification from an *E.coli* extract. The column fractions containing GFP or BFP will be identified by fluorescence and then purified. As an optional activity, purified protein fractions can be separated by SDS polyacrylamide gel electrophoresis (SDS-PAGE) to estimate the purity and size of the GFP and BFP proteins.

Storage: Some Components Require Freezer Storage Upon Receipt.

CLICK HERE For Experiment #255 Components and Requirements.

Packing/running column 45 min.
Optional electrophoresis 60 min.
Staining 30 min.
Destaining 2 hours

PERFECT PARTNER

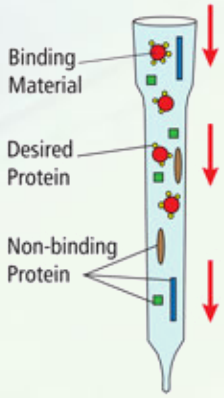
Cat. #969

Long Wave UV Mini Lamp

Cat. #277

Affinity Chromatography of Glucose Binding Proteins

EDVOTEK® exclusive!



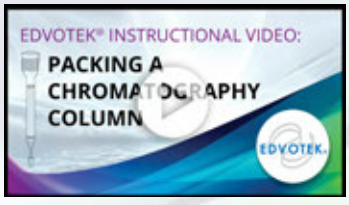
For 10 Groups. In this experiment, students will prepare a seed extract from Jack Bean Meal, fractionate the extract by affinity chromatography, and elute the bound glucose binding protein. The presence of biological activity is determined by an immunoblot enzyme assay.

Requires 2 hours

Storage: Some Components Require Refrigerator Storage Upon Receipt.

CLICK HERE For Experiment #277 Components and Requirements.

Check Out Our Related Videos:



NEW

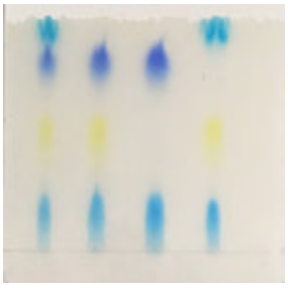
Cat. #211

Dangerous or Delicious: Using Chromatography to Examine Vaping

Spotting Plates - 20 min.
TLC Separation - 5 min.

For 8 Separations. Vaping is rising in popularity but many of its health effects are unknown. In this experiment, students become medical researchers and investigate the chemical contents of three simulated e-liquids using thin layer chromatography.

- Explore the health risks of e-cigarettes and vaping
- Investigate the chemical contents of three simulated e-liquids
- Perform Thin Layer Chromatography
- Introduce chromatographic theory using two different solvent systems



Storage: Some Components Require Refrigerator Storage Upon Receipt.

CLICK HERE **For Experiment #211 Components and Requirements.**

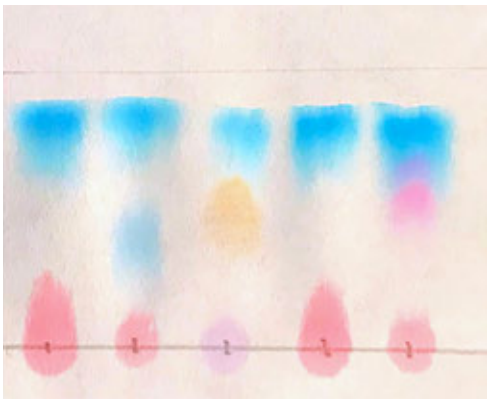
NEW

Cat. #196

Write to a Fair Trial: Forensic Handwriting Analysis

Spotting 10 min.
Separation 45 min.

For 10 groups. 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.



Storage: Room Temperature.

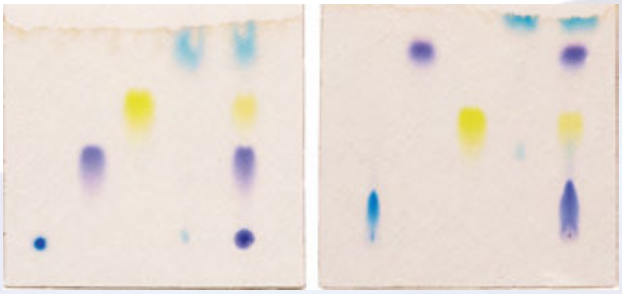
CLICK HERE **For Experiment #196 Components and Requirements.**

Cat. #113

Principles of Thin Layer Chromatography

Spotting Plates 20 min.
TLC Separation 5 min.

For 8 Separations. 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.



Storage: Some Components Require Refrigerator Storage Upon Receipt.

CLICK HERE **For Experiment #113 Components and Requirements.**

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12

Cat. #1511, #1512, and #1513

DNA & RNA Models

Your students can build a model of DNA with this simple and colorful system. The parts are color-coded to represent the purines, pyrimidines, deoxyribose and phosphodiester groups that make up the double helix of DNA. This kit includes differently sized purines and pyrimidines, the correct number of hydrogen bonds and the minor and major grooves are shown. Ideal for modelling DNA replication. Use together with the RNA Protein Synthesis Kit (Cat. #1513) to model transcription and translation. Easy to assemble and disassemble.

Cat. #1511

Cat. #1511 Includes:

- 12 Spacers
- 12 Nitrogenous base-pairs:
  - 6 Thymine (orange)
  - 6 Adenine (blue)
  - 6 Guanine (green)
  - 6 Cytosine (yellow)
- 2 Polynucleotide side-chains:
  - 24 Ribose (red)
  - 24 Phosphate (purple)
- Stand, support rod, & cap
- Assembly leaflet

Cat. #1512 Includes:

- 24 Spacers
- 22 Nitrogenous base-pairs:
  - 11 Thymine (orange)
  - 11 Adenine (blue)
  - 11 Guanine (green)
  - 11 Cytosine (yellow)
- 2 Polynucleotide side-chains:
  - 44 Ribose (red)
  - 44 Phosphate (purple)
- Stand, support rod, & cap
- Assembly leaflet

Cat. #1513 Includes:

- 3 (U) Uracil, Light Blue
- 3 (A) Adenine, Blue
- 3 (G) Guanine, Green
- 3 (C) Cytosine, Yellow
- 6 (R) Ribose, Claret
- 6 (P) Phosphate, Purple
- 2 tRNA (transfer RNA) Part
- 2 Amino Acid Unit
- Assembly leaflet

DNA Models

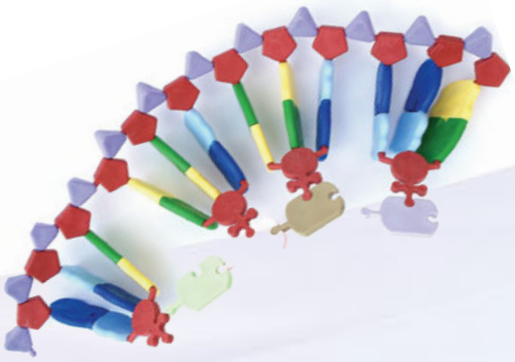
Cat. #1511 12 Layers, 6 Pieces per Layer = 72 pieces

Cat. #1512 22 Layers, 6 Pieces per Layer = 132 pieces

RNA Model

Cat. #1513 24 base RNA Protein Synthesis kit

Cat. #1513



Cat. #S-80

Classroom Molecular Biology Toys & Games

EDVOTEK® exclusive!

Gene of Fortune™ Game

For 10 Groups. This novel "Bingo" game is an excellent resource to introduce concepts of the genetic code. The games can be played over several class periods. Concepts reinforced include the genetic code, single and three letter amino acid abbreviations, and the characteristics of amino acids. The game includes a Gene of Fortune™ Spinner, 10 different cards, game chips, and instruction manual.

Genetic Dice™ Game

For 10 Groups. Using Genetic Dice™, students will have fun while they learn about DNA. This resource utilizes a set of game boards, genetic dice, and game chips to reinforce concepts centering on Watson-Crick DNA base pair rules.

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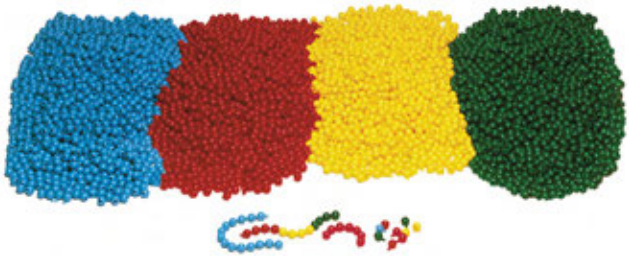
Biochemistry • DNA & Genetics • Neurobiology • Anatomy & Physiology • Cells • Bundles

Cat. #1500

Colored DNA Beads

A set of colored beads that can be designated to represent the Watson-Crick DNA bases (A, T, G, C). The beads can be used in a variety of ways to demonstrate concepts related to the structure and biology of DNA. Includes detailed outline of various sample demonstrations. Includes 150 beads of each color.



RELATED PRODUCT

NEW

MyLab™ Custom Kit #1103

Building DNA with Beads

DISTANCE LEARNING

- Understand DNA base pairing
- Model the structure of DNA
- Explore palindromes, restriction enzymes, DNA synthesis, and genetic engineering
- Includes instructions, 75 colored beads

Cat. #S-20

How Do You Clone A Gene?

For 5 Lab Groups. In this kit, a set of multicolored links demonstrates a variety of molecular biology simulations. Students learn about digesting DNA with restriction enzymes, cloning genes in plasmids, protein structure and more!

Complete in 30 min.

Storage: Room Temperature.

CLICK HERE For Experiment #S-20 Components and Requirements.

BEST SELLER

Cat. #S-43 & S-43-20

DNA DuraGels™

EDVOTEK® exclusive!

DNA DuraGel™ gels are permanent polymer gels that allow students to practice the critically important skill of pipetting/gel loading. The clear, reusable gels are designed for the practice of loading 5-35 µL of samples. Gel models are imprinted with a ruler for sizing DNA fragments. Also included are simulated gel images, ideal for representing blue-stained and fluorescent-stained gels.

Cat # S-43

DNA DuraGels™

For 12 to 24 Students
Includes 6 Gels and 8 images (4 FlashBlue™ and 4 InstaStain® Ethidium Bromide gel images)

Cat # S-43-20

DNA DuraGels™

For 4 Students or Classroom Demo
Includes 2 Gels and 4 images (2 FlashBlue™ and 2 InstaStain® Ethidium Bromide gel images)

RELATED PRODUCT

NEW

MyLab™ Custom Kit #1106

Micropipetting Basics

DISTANCE LEARNING

BEST SELLER

Cat. #S-44

Micropipetting Basics

For 10 Lab Groups. Teach your students how to use a micropipette with ease and accuracy by experimenting with multicolored dyes. A fun and cost effective way to learn this important skill.

- Teach your students how to use a micropipette with ease and accuracy using bright and color-changing dyes
- Practice using an adjustable micropipette and pipetting solutions of different viscosities
- Learn about accuracy and precision in biotechnology
- Introduce additional lab skills: metric conversions, sample handling, reading charts, and creating replicates

Complete in 45 min.

Storage: Room Temperature.

CLICK HERE For Experiment #S-44 Components and Requirements.

BEST SELLER

Cat. #119

Genes In A Tube™

For 26 Students. 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!

Complete in 30 min.

Storage: Room Temperature.

CLICK HERE **For Experiment #119 Components and Requirements.**

Cat. #S-75

Do Onions, Strawberries and Bananas Have DNA?

For 10 Lab Groups. 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.

Complete in 30 min.

Storage: Store in Refrigerator Upon Receipt.

CLICK HERE **For Experiment #S-75 Components and Requirements.**

Cat. #S-10

What Does DNA Look Like?

For 10 Lab Groups. 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!

Complete in 30 min.

Storage: Store in Refrigerator Upon Receipt.

CLICK HERE **For Experiment #S-10 Components and Requirements.**

RELATED PRODUCTS

MyLab™ Custom Kits

NEW

Are you planning a virtual curriculum or looking for experiments ideal for distance learning? With MyLab™ Custom Kits from EDVOTEK®, you can plan your curriculum and have all the materials sent directly to your students! CLICK HERE

MyLab™ Custom Kit #1104

Spooling DNA on a Stick

Includes chromosomal DNA, spooling sticks, transfer pipettes, DNA stain.

DISTANCE LEARNING

MyLab™ Custom Kit #1105

Extracting Fruit & Vegetable DNA

Includes extraction buffer, test tubes, pipettes, and spooling stick.

NEW

Cat. #161

How Clean is Clean? Testing the Effectiveness of Antibacterial Cleaners

For 10 Lab Groups. Microbes, including bacteria, are living organisms that are too small to be seen with the naked eye. In this lab, students will do two experiments to explore the properties of bacterial growth. First, they will determine a bacteria's ability to resist the antibiotic ampicillin, then they will test different household cleaners to determine which is most effective at preventing bacterial growth.

Complete in 2 lab periods (24 hours).

Storage: Some Components Require Refrigerator Storage.

CLICK HERE For Experiment #161 Components and Requirements.

RELATED PRODUCT

NEW

MyLab™ Custom Kit #1301

How Clean is Our Home Environment?

DISTANCE LEARNING

- Learn about bacteria and where they are in your home
- Experiment with household cleaners to see which are most effective at killing bacteria
- Understand the relationship between bacteria and cleaning
- Includes petri dishes, agar, filter paper, and transfer pipettes

NEW

Cat. #1100

Scents & Sense-ability

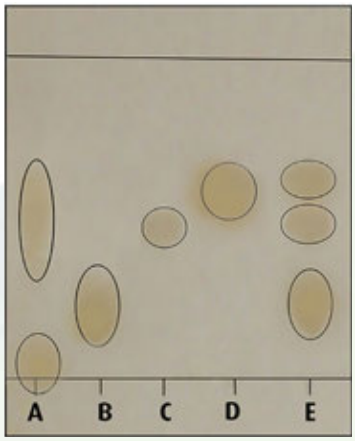
For 10 Groups. The objective of this experiment is for students to understand that olfactory receptors respond to smells and transmit them as signals to the brain. Students will also be able to understand the principles of thin layer chromatography and how they apply to the separation of olfactory compounds. *NGSS-aligned with MS-LS8.*

Complete in 65 min.

Storage: Room Temperature.

CLICK HERE For Experiment #1100 Components and Requirements.

Kit contains perishable materials. Please request materials 2 weeks prior to lab.



Cat. #S-74

What Is Osmosis?

For 5 Lab Groups. 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.

Complete in 45 min.

Storage: Room Temperature.

CLICK HERE For Experiment #S-74 Components and Requirements.

Cat. #S-30

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

For 10 Groups. 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 pollution. *NGSS-aligned with MS-LS1 and MS-LS2*

Complete in 30 min. and grow overnight.

Storage: Room Temperature.

CLICK HERE For Experiment #S-30 Components and Requirements.

Cat. #166

Detection of a Simulated Infectious Agent

For 25 Students. An infectious outbreak requires prompt & accurate identification of the biological agent. Often, early clinical symptoms are first identified in exposed individuals & then infectious agents are determined by lab tests. In this kit, students will transmit a simulated infectious agent (chemical dye) between classmates. The simulated infections agent is only visible under long-wave UV light. The pattern of transmission and primary source will be documented. *NGSS-aligned with MS-LS2.C*

Requires 30-45 min.

Storage: Room Temperature.

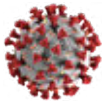
CLICK HERE For Experiment #166 Components and Requirements.

RELATED PRODUCT

NEW

MyLab™ Custom Kit #1219

Simulation of COVID-19 Antibody Test



- Learn about antibody based detection techniques.
- Perform an ELISA at home.
- Understand current testing techniques for COVID-19 through a simulated experiment.
- Includes controls, antibodies, test strips, detection substrate, transfer pipettes.

Cat. #S-68

What is an Epidemic and How Does An Infection Spread?

For 10 Groups. Infectious agents such as bacteria & 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.

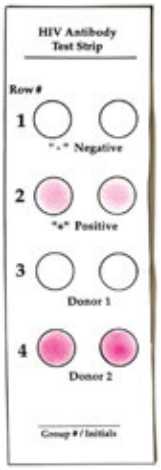
Complete in 30 min.

Storage: Room Temperature.

CLICK HERE For Experiment #S-68 Components and Requirements.

Cat. #S-70

How Does a Doctor Test for AIDS?



For 10 Groups. Your body defends itself from attack by infectious agents like bacteria & viruses by producing antibodies. Enzyme Linked Immunosorbent Assays (ELISA) test for antibodies present in the blood, which indicate infection. In this kit, students perform a simulated ELISA test to identify infected samples & compare them to control samples.

Complete in 45 min.

Storage: Room Temperature.

CLICK HERE For Experiment #S-70 Components and Requirements.

Cat. #269

Introduction to ELISA Reactions

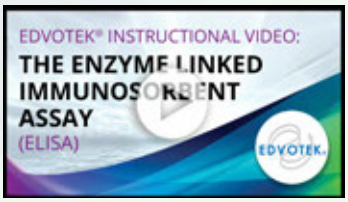
For 10 Groups. Your students will learn the basic principles of the Enzyme-linked Immunosorbent Assay (ELISA) in this precise and sensitive antibody-based detection kit. Experiment components do not contain human serum.

Complete in 45 min.

Storage: Some Components Require Refrigerator Storage Upon Receipt.

CLICK HERE For Experiment #269 Components and Requirements.

Check Out Our Related Video:



Cat. #140

Blood Typing

For 10 Groups. In human blood, there are two major antigens and antibodies designated as A or B and anti-A or anti-B. Blood type (A, B, AB, or O) can be determined using an agglutination assay where roughly equal concentrations of sample antigen and previously isolated antibodies are mixed and then monitored for precipitation. This test is often used to ensure safe blood transfusions. However, it can also be used in the field of forensics. Agglutination assays can confirm that collected evidence is human blood before more time intensive tests are performed. In addition, blood typing can screen potential suspects by blood group.

Complete in 45 min.

Storage: Room Temperature.

CLICK HERE For Experiment #140 Components and Requirements.

RELATED PRODUCT

NEW

MyLab™ Custom Kit #1191

Forensics Blood Typing

DISTANCE LEARNING

- Learn about basic forensic detection techniques
- Swab simulated crime scene samples to detect blood left at the scene
- Analyze the crime scene samples to determine the suspect's blood type
- Understand presumptive vs. confirmatory testing

Kits on this page include the following:

Instructions, Ready-to-Load™ QuickStrip™ Dye samples, UltraSpec-Agarose™ powder, electrophoresis buffer, practice gel loading solution, disposable pipets.

All you need:
Electrophoresis apparatus, power supply, automatic micropipette and tips (optional), white light box (optional), microwave or hot plate, distilled water.

Storage:
Room Temperature Stable. Storage of Ready-to-Load QuickStrip™ samples in the Refrigerator is Recommended.

45 min.

These kits require approximately 45 min. to complete.

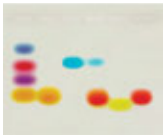
Cat. #S-49

In Search of My Father

For 10 Gels/10 Lab Groups. 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 it be a happy ending? CLICK HERE

Cat. #S-47

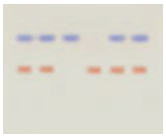
Linking Food Science to Biotechnology: Unlock the Color of Candies



For 10 Gels/10 Lab Groups. Investigate how agarose gel electrophoresis unlocks the color code used by food scientists to make colorful candies. Students will extract colors 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. ***NOTE: Dye samples are not provided for #S-47 as students will extract their own dyes from colorful candies.*** CLICK HERE

Cat. #S-50

Why Do People Look Different?



For 10 Gels/10 Lab Groups. 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. CLICK HERE

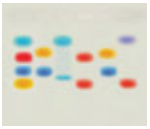
Cat. #S-51

Whose DNA Was Left Behind?

For 10 Gels/10 Lab Groups. DNA obtained from 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. CLICK HERE

Cat. #S-46

Linking STEM to Agarose Gel Electrophoresis



For 10 Gels/10 Lab Groups. Link important STEM concepts using Agarose Gel Electrophoresis. Help your students learn about the application of gel electrophoresis in DNA Fingerprinting, DNA Paternity Testing, Genetics (related to health and well-being), or the detection of Genetically Modified Foods. 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. CLICK HERE

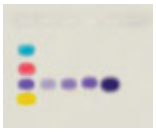
Cat. #S-53

Mystery of the Crooked Cell

For 10 Gels/10 Lab Groups. This lab demonstrates detection of the mutation that causes Sickle Cell Anemia. In this simulation, your students will use electrophoresis to separate dyes that represent patient samples and controls. CLICK HERE

Cat. #S-48

What is PCR & How Does It Work?



For 10 Gels/10 Lab Groups. This simulation experiment demonstrates the process of DNA amplification by PCR and how the amplified product is detected by separating the reaction mixture by agarose gel electrophoresis. CLICK HERE

Cat. #S-52

The Secret of the Invisible DNA: A Genetics Exploration

For 10 Gels/10 Lab Groups. 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 (medical diagnostics or alien genetics). Fluorescent dyes simulate DNA fragments, eliminating post-electrophoresis staining and saving you valuable classroom time! ***NOTE: A long wave UV light (Cat. #969) or black light and UV safety goggles are required for viewing the fluorescent dyes.*** CLICK HERE

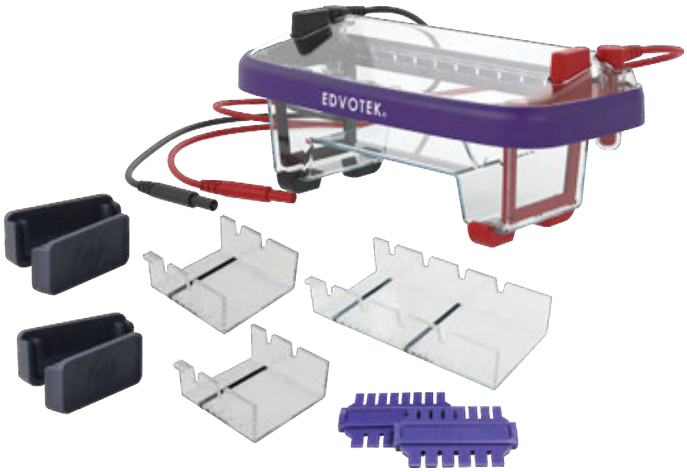
RELATED PRODUCT

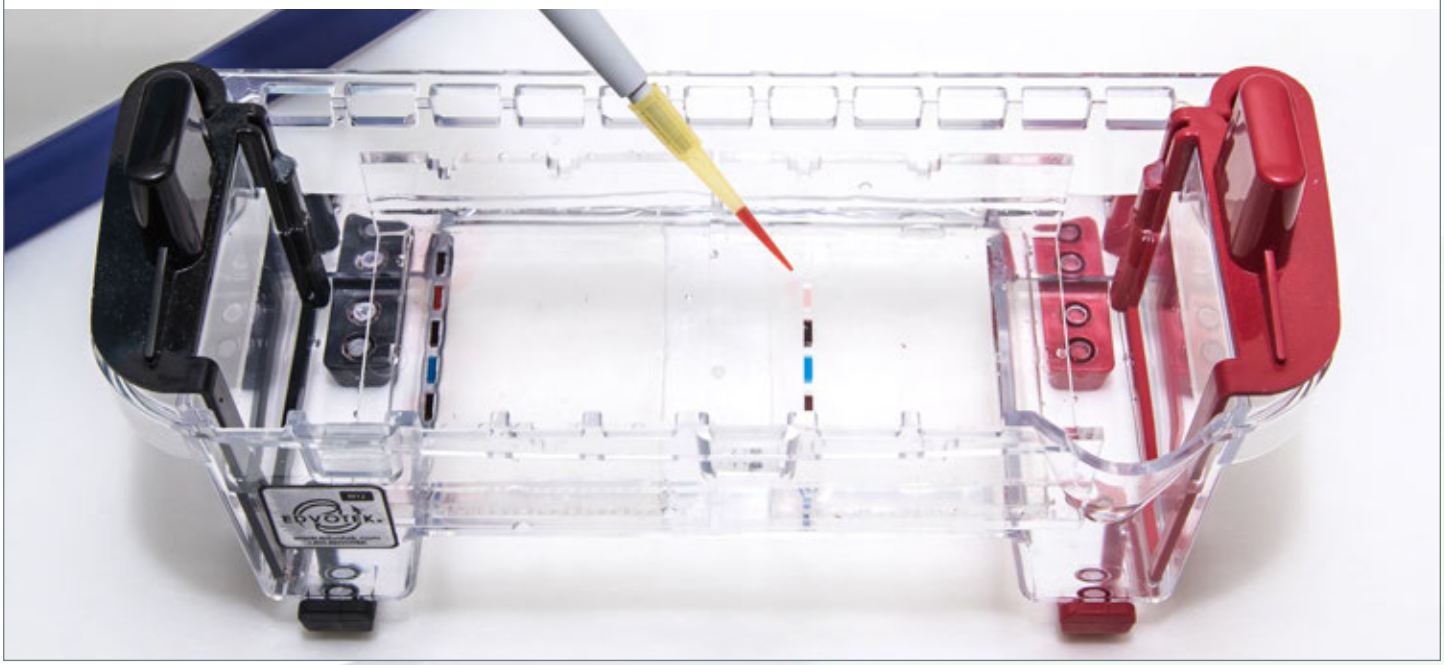
Cat. #502-504

M12 Complete™ Electrophoresis Package

For 1 or 2 Lab Groups. 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 15-30 minutes and includes a lifetime warranty.

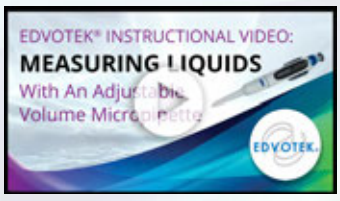
Includes: (2) 7 x 7 cm Gel Trays, (1) 14 x 7 cm Gel Tray, (2) 6/8 Tooth Combs, (4) Rubber End Caps, and (1) DNA DuraGel™ (Cat. #S-43)





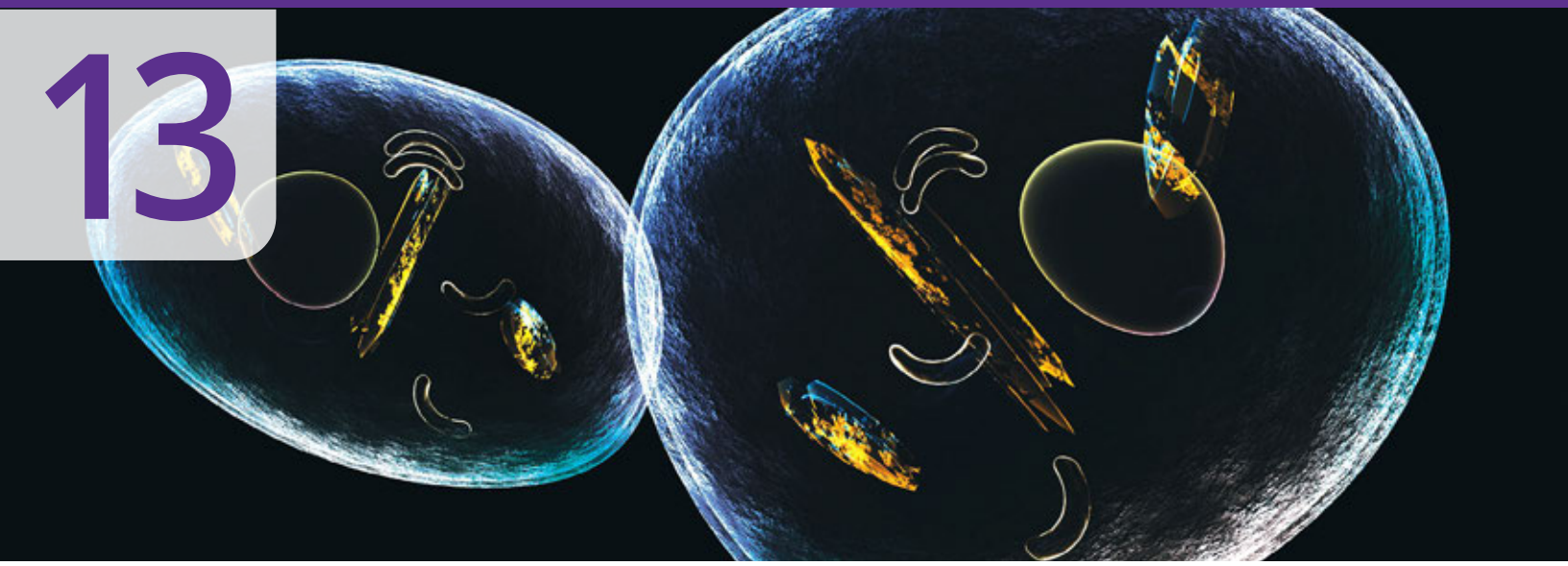
NEW EDVOTEK® Instructional Videos

The following related videos are recommended for this section:



https://www.youtube.com/user/EdvotekInc

13



BIG IDEA AP BIOLOGY

The Advanced Placement* Biology curriculum, developed by the College Board, offers high school students the opportunity to gain credit for introductory college level biology courses. Since 1991, EDVOTEK® has proudly offered reagents and equipment for all labs necessary to fulfill the AP Biology Lab requirement.

The EDVOTEK Advantage:

EDVOTEK's **BIG IDEA AP Biology Investigations** are designed with three principles in mind: safety, value, and reproducibility. We've eliminated the need for using toxic chemicals that not only have the potential for causing harm to students, but also pose a threat to the environment. Our labs provide the most value and are tested to ensure that you get the results you expect.

Help your high school students prepare for higher education as they learn the core concepts of this innovative and exciting introductory level college course!

Cat. # AP-PKG INVESTIGATIONS 1-13

AP Biology Special Package

Includes all 13 Investigations!

BIG IDEA 1
Evolution

Investigation 1
Artificial Selection

Investigation 2
Mathematical Modeling: Hardy-Weinberg

Investigation 3
Comparing DNA Sequences to Understand Evolutionary Relationships with BLAST

BIG IDEA 2
Cellular Processes: Energy and Communication

Investigation 4
Diffusion and Osmosis

Investigation 5
Photosynthesis

Investigation 6
Cellular Respiration

BIG IDEA 3
Genetics and Information Transfer

Investigation 7
Cell Division: Mitosis and Meiosis

Investigation 8
Biotechnology - Bacterial Transformation

Investigation 9
Biotechnology: Restriction Enzyme Analysis of DNA

BIG IDEA 4
Interactions

Investigation 10
Energy Dynamics

Investigation 11
Transpiration

Investigation 12
Fruit Fly Behavior

Investigation 13
Enzyme Activity

**Advanced Placement (AP) Program is a registered trademark of the College Entrance Examination Board. These laboratory materials have been prepared by EDVOTEK, Inc. which bears sole responsibility for their contents.*

EVOLUTION

Most AP Biology kits are designed for 10 lab groups!

Cat. #AP01 INVESTIGATION 1

Artificial Selection

STEM

For 10 Groups. Students will perform artificial selection on a population of Quick Plant™, and identify traits that vary in the population. Then they will perform artificial selection by cross-pollinating only selected plants and observe the trait differences between the two populations to learn how selection works.

30 min. lab periods over the course of 5-7 weeks.

Storage: Room Temperature.

CLICK HERE **For Experiment #AP01 Components and Requirements.**

Cat. #AP02 INVESTIGATION 2

Mathematical Modeling: Hardy-Weinberg

	A	a
A	AA	Aa
a	Aa	aa

For 10 Groups. The application of the Hardy-Weinberg law of genetic equilibrium demonstrates that mutations, genetic drift and natural selection have a dramatic effect on gene frequency in a population. Using computer and Internet access, students will explore how a hypothetical gene pool changes from one generation to the next.

Requires 2 hours.

Storage: Room Temperature.

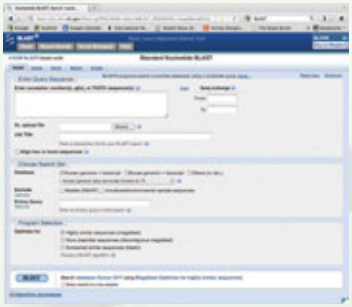
CLICK HERE **For Experiment #AP02 Components and Requirements.**

INVESTIGATION 2 ALTERNATIVE

Cat. #345
Exploring the Genetics of Taste: SNP Analysis of the PTC Gene Using PCR

Cat. #AP03 INVESTIGATION 3

Comparing DNA Sequences to Understand Evolutionary Relationships with BLAST



For 10 Groups. In this experiment, several genes will be submitted to an internet database to identify and compare the genes. Students will then use this information to construct a cladogram - a phylogenetic tree representing evolutionary relatedness of species.

Requires 45 min.

FREE DOWNLOAD! CLICK HERE

INVESTIGATION 3 ALTERNATIVES

Cat. #339
Sequencing the Human Microbiome

Cat. #340
DNA Bioinformatics

BIG IDEA 2 AP BIOLOGY CELLULAR PROCESSES, ENERGY & COMMUNICATION

Cat. #AP04 INVESTIGATION 4

Diffusion and Osmosis

For 10 Groups. In this experiment, students use artificial cells to study the relationship of surface area and volume. Then they will create models of living cells to explore osmosis and diffusion, and observe osmosis in living cells. Various diffusion and osmosis principles are performed in this lab.

Complete in 60-90 min.

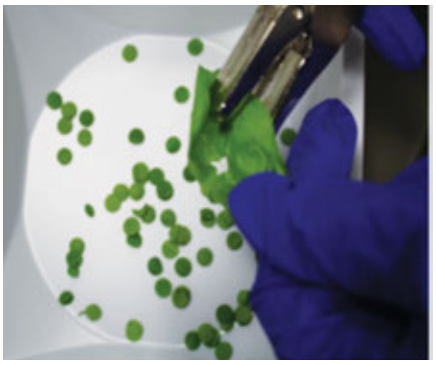
Storage: Room Temperature.

CLICK HERE **For Experiment #AP04 Components and Requirements.**

Cat. #AP05 INVESTIGATION 5

Photosynthesis

STEM



For 10 Groups. In this experiment, students will learn how to measure the rate of photosynthesis indirectly by studying the floating leaf disk assay, and test different variables that might affect the photosynthesis process.

Complete in 1.75 hours (2 lab periods).

Storage: Room Temperature.

CLICK HERE **For Experiment #AP05 Components and Requirements.**

Cat. #AP06 INVESTIGATION 6

Cellular Respiration

STEM

For 10 Groups. In this experiment, students learn how to apply the gas laws to the function of the microrespirometer. Students will observe cell respiration of germinating seeds and describe the effects of temperature on the rate of cell respiration.

Complete in 2 hours (2 lab periods).

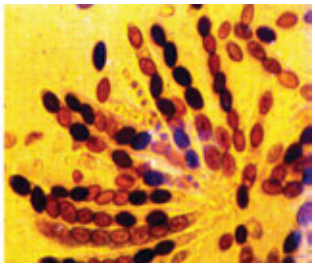
Storage: Room Temperature.

CLICK HERE **For Experiment #AP06 Components and Requirements.**

GENETICS AND INFORMATION TRANSFER

Cat. #AP07 INVESTIGATION 7

Cell Division:
Mitosis and Meiosis



For 10 Groups. Students learn to identify and differentiate various stages in mitosis and meiosis. Onion root tips are stained to identify the various stages and duration of mitosis. Meiosis and Crossing Over in Sordaria are also demonstrated in this experiment. Students will also have an opportunity to analyze the mechanism involved with loss of cell cycle control in cancer.

Requires 60 min.

Storage: Room Temperature.

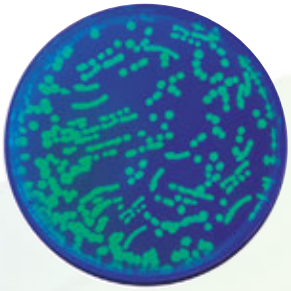
CLICK HERE **For Experiment #AP07 Components and Requirements.**

Cat. #223-AP08 INVESTIGATION 8

Biotechnology:
Bacterial Transformation

STEM

Transformation of E.coli with Green Fluorescent Protein



For 10 Groups. In this experiment, transformed cells take up a plasmid containing the GFP gene, which has been isolated from the jellyfish *Aequorea victoria*. Transformed colonies expressing the GFP protein are visibly green in normal light but will fluoresce brightly when exposed to long wave UV light.

Plating 50 min. + Incubation overnight , Transformation efficiency 15 min.

Storage: Some Components Require Refrigerator & Freezer Storage.

CLICK HERE **For Experiment #223-AP08 Components and Requirements.**

INVESTIGATION 8 ALTERNATIVE

Cat. #224
Rainbow Transformation

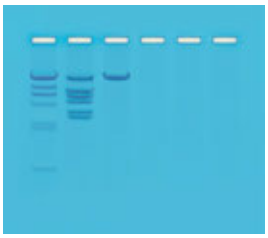
Check Out Our Related Videos:

GENETICS AND INFORMATION TRANSFER, *continued*

Cat. #AP09-112 INVESTIGATION 9

Biotechnology: Restriction Enzyme Analysis of DNA

STEM



For 8 Gels/8 Lab Groups. Restriction enzyme digestion and size separation by agarose gel electrophoresis are essential research tools that helped launch the era of biotechnology. In this activity, students will use agarose gel electrophoresis to separate, analyze, and compare bacteriophage lambda DNA before and after digestion with *Hin*dIII and *Eco*RI restriction enzymes. Using lambda DNA cut with *Hin*dIII, students can also construct a standard curve and determine the molecular weights of the two other samples.

ALSO Available: Cat. #AP09-C DNA Samples Only in Microtest Tubes, *For 24 gels*

Requires 45 min.

Storage: Room Temperature Stable. Storage of Ready-to-Load QuickStrip™ samples in the Refrigerator is Recommended.

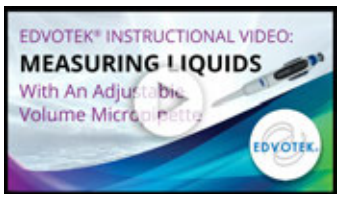
CLICK HERE **For Experiment #AP09-112 Components and Requirements.**

INVESTIGATION 9 ALTERNATIVES

Cat. #212
Cleavage of Lambda DNA with *Eco*RI Restriction Enzyme

Cat. #109
DNA Fingerprinting by Restriction Enzyme Pattern

Check Out Our Related Videos:



INTERACTIONS

Cat. #AP10 INVESTIGATION 10

Energy Dynamics

STEM

For 10 Groups. In this activity, students model how energy flows through a meadow ecosystem with an emphasis on the concepts of trophic levels and entropy. This is an alternative lab activity that does not require growing *Brassica rapa* or rearing the invasive pest, *Pieris rapae*. Following the exercise, students will be able to explain how biological systems use free energy, predict the effects of community changes on energy and nutrient flow, and apply mathematical equations to describe key abiotic and biotic interactions.

Requires 30-40 min.

FREE DOWNLOAD! CLICK HERE

BIG IDEA 4 AP BIOLOGY INTERACTIONS, *continued*

Cat. #AP11 INVESTIGATION 11

Transpiration

STEM

For 10 Groups. In this activity, students explore water potential and transport within plants as well as the environmental factors and cellular adaptations that affect this key biological process. Using a photometer, students will observe transpiration in bean seedlings under multiple growing conditions, graph water loss, and relate their results to the opening and closing of stomates. They will then stain, visualize, describe, and classify cell structure from several plant tissue types.

Requires 1-2 hours.

Storage: Room Temperature.

CLICK HERE **For Experiment #AP11 Components and Requirements.**

Cat. #AP12 INVESTIGATION 12

Fruit Fly Behavior

For 10 Groups. This experiment introduces students to the field of ethology and the model organism *Drosophila melanogaster*. After constructing choice chambers, students will investigate fruit fly responses to gravity (geotaxis), chemicals (chemotaxis), and light (phototaxis). The resulting data is analyzed to highlight environmental factors that trigger different orientation behaviors and to identify possible patterns. This lab also encourages additional student-direct investigations.

Requires 1.5-2 hours.

Storage: Room Temperature.

CLICK HERE **For Experiment #AP12 Components and Requirements.**

Cat. #AP13 INVESTIGATION 13

Enzyme Activity

STEM

For 10 Groups. Enzymes are biological catalysts that speed up chemical reactions by lowering activation energy and are fundamental to life. In this easy and safe experiment, students will learn about enzyme catalysis, the nature of enzyme action, and protein structure-function relationships. First, students will develop a method for measuring peroxidase in plant material. Next, they will experiment with the effects of pH and temperature on enzymatic activity and determine optimal reaction conditions for the test enzyme. This experiment uses a safer system that eliminates the need for sulfuric acid and potassium permanganate. Quantification in this lab requires access to a spectrometer.

Requires 30-45 min.

Storage: Store in Refrigerator Upon Receipt.

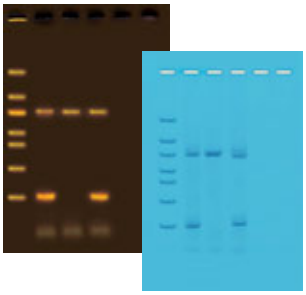
CLICK HERE **For Experiment #AP13 Components and Requirements.**

INVESTIGATION OPTIONS

Cat. #345 INVESTIGATION 2 OPTION

Exploring the Genetics of Taste: SNP Analysis of the PTC Gene Using PCR

For 25 Reactions. This is a set of five modules that starts with (I) extraction of DNA from buccal cells (II) amplifying the segment that contains the polymorphic nucleotide (III) digestion of the amplified fragment with the restriction enzyme that recognizes the SNP (IV) analysis by gel electrophoresis (V) tasting the PTC paper to confirm the results obtained.) CLICK HERE

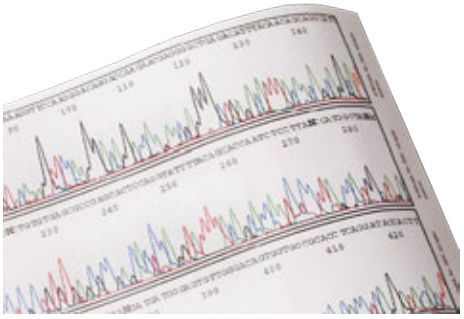


Cat. #337 INVESTIGATION 2 OPTION

Drosophila Genotyping Using PCR

Advanced Topic

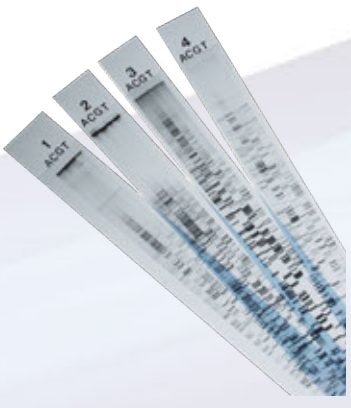
For 10 Groups. Students will learn about DNA polymorphisms by amplifying DNA regions that vary between wild & mutant *Drosophila*. Amplified DNA from wild-type and white-eyed flies are separated by agarose gel electrophoresis and analyzed. CLICK HERE



Cat. #339 INVESTIGATION 3 OPTION

Sequencing the Human Microbiome

For 10 Groups. Humans live in a delicate balance with the microorganisms that live in and on their bodies. If this balance is disrupted, harmful bacteria can multiply and cause disease. In this experiment, students will read DNA sequences obtained from automated DNA sequencing techniques. The data will be analyzed using publicly available databases to identify the bacterial species present in a patient sample. The results will be used to make a diagnosis. CLICK HERE



Cat. #340 INVESTIGATION 3 OPTION

DNA Bioinformatics

For 12 Groups. DNA sequence information is being compiled by various genome initiatives and numerous research groups around the world. The management of this data is known as bioinformatics. This information is stored in various DNA sequence databases which can be readily accessed via the internet. In this experiment, students read autoradiographs containing DNA sequences which represent segments of important cellular genes. Using bioinformatics databases, students compare and extrapolate database information and identify the gene product. CLICK HERE

Cat. #224 INVESTIGATION 8 OPTION

Rainbow Transformation

For 10 Groups. In this colorful experiment, students will explore the biological process of bacterial transformation using vibrant chromogenic proteins. Students will use three recombinant plasmids to transform *E.coli* bacteria. The resulting *E.coli* will be examined for the presence of blue, purple, and pink pigments, as well as for resistance to ampicillin. Features our new enhanced transformation protocol for improved student results. CLICK HERE

BEST SELLER

Cat. #109 INVESTIGATION 9 OPTION

DNA Fingerprinting by Restriction Enzyme Patterns

For 8 Groups. DNA fingerprinting examines highly variable regions of DNA in order to create a genetic profile of an individual. Criminal investigators use DNA fingerprinting to help identify individuals, place a person at a crime scene, or eliminate a suspect from consideration. Importantly, DNA fingerprinting has less than a one in a billion chance of matching another individual (except an identical twin) and is very difficult to fake or change. In this experiment, students use gel electrophoresis to compare crime scene DNA to the DNA of two suspects. Particular emphasis is placed on RFLP analysis, the power of restriction enzymes to detect DNA sequence differences, and the importance of combining evidence from multiple DNA locations. CLICK HERE

Cat. #212 INVESTIGATION 9 OPTION

Cleavage of Lambda DNA with *Eco*RI Restriction Enzyme

For 10 restriction digestions and 5 gels. Restriction enzymes are endonucleases that catalyze the cleavage of DNA. This process can be observed using agarose gel electrophoresis - a powerful separation method frequently used in molecular biology. In this lab, the DNA from bacteriophage lambda is digested with the restriction enzyme *Eco*RI. Students will digest DNA, run agarose gel electrophoresis, size the fragments using a standard curve, and compare the fragments to undigested lambda DNA. A great way to teach key research tools that helped launch the era of biotechnology! CLICK HERE

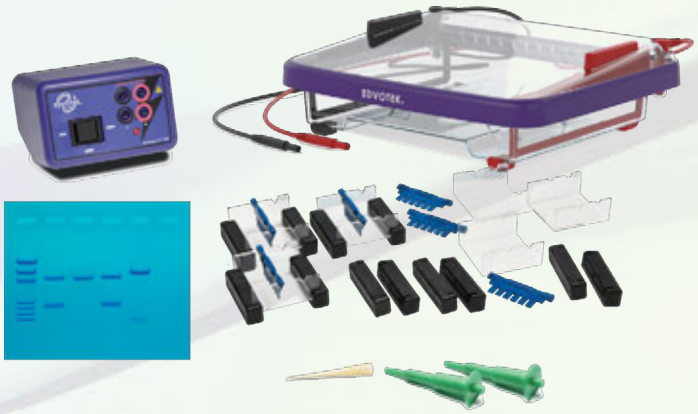
RELATED EQUIPMENT

BEST SELLER

Cat. #5062

Classroom DNA Electrophoresis LabStation™

CLICK HERE



Includes:

1 Cat. #515 M36 HexaGel™ Electrophoresis Apparatus (Six 7x7 cm Trays/Combs/End Caps)
1 Cat. #509 DuoSource™ 150 (75/150 V for 1 or 2 units)
2 Cat. #588 Fixed Volume MiniPipette (40 µL)
1 Cat. #636 Yellow Micropipette Tips (1 - 200 µL / 2 Racks of 96)
1 Cat. #130 DNA Fingerprinting Classroom Kit

14

NEW

Cat. #1100

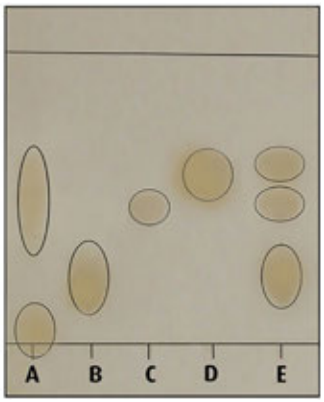
Sense and Sense-ability

For 10 Groups. 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 the separation of olfactory compounds. *NGSS-aligned with MS-LS8*

Storage: Room Temperature.

CLICK HERE For Experiment #1100 Components and Requirements.

Complete in 60-70 min.



NEW

Cat. #1110

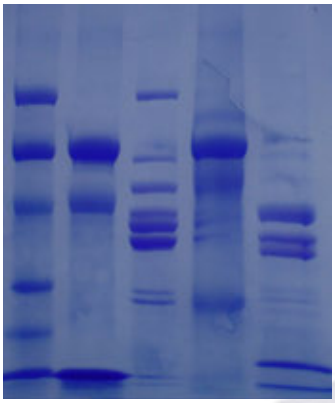
Cell Types in the Brain

For 6 Groups Sharing 3 Polyacrylamide Gels. The brain is an incredibly complex organ and is responsible for regulating almost everything within our body. It allows us to form complex thoughts, read, write, move, breathe, play sports, and listen to music. It does this through a network of cells working together to function. The objective of the experiment is for students to examine the differences between cell types in the brain based on their profiles of proteins.

Storage: Room Temperature.

CLICK HERE For Experiment #1110 Components and Requirements.

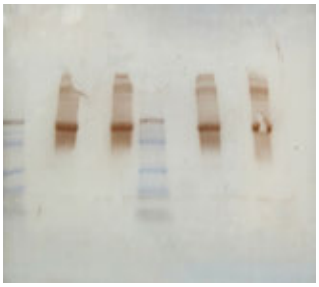
Electrophoresis - 60 min.
Staining 1-3 hours or overnight.



NEW

Cat. #1115

Detecting Risk Factors for Alzheimer's Disease Using Western Blot



For 6 Groups, With 2 Groups Sharing a Gel. The objective of this experiment is for students to understand the theory and application of western blotting. Students will perform a western blot to determine simulated clinical trial participants' risk of developing Alzheimer's Disease.

Electrophoresis - 90 min., Western Blot 15 min. to overnight, Immunodetection 3 hours.

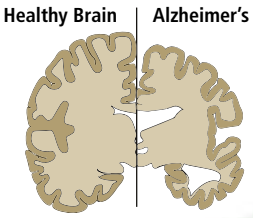
Storage: Some Components Require Refrigerator Storage.

CLICK HERE For Experiment #1115 Components and Requirements.

NEW

Cat. #1116

Researching Alzheimer's Disease by ELISA



For 10 Groups. The objective of this experiment is for students to understand the theory and application of western blotting. Students will perform a western blot to determine simulated clinical trial participants' risk of developing Alzheimer's Disease.

Requires 60-90 minutes.

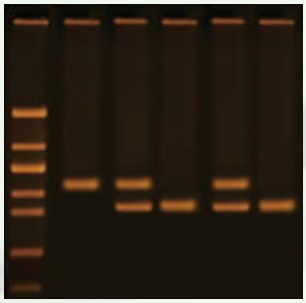
Storage: Some Components Require Refrigerator Storage.

CLICK HERE For Experiment #1116 Components and Requirements.

NEW

Cat. #1125

Diagnosing Huntington's Using PCR



For Five Complete Sets of Reactions. In this experiment, students will conduct a DNA fingerprinting exercise on simulated patient samples to determine if family members are heterozygous or homozygous for Huntington's Disease. Students will then analyze the amplified DNA segments by agarose gel electrophoresis.

Storage: Some Components Require Freezer Storage.

CLICK HERE For Experiment #1125 Components and Requirements.

Set Up 30 min.
PCR 2 hours or overnight
Electrophoresis 45 min.

Electrophoresis Reagents

SYBR® Safe Stain
10,000X Concentrate, For 750 mL
Cat. #608

FlashBlue™ DNA Staining System
10X Concentrate, For 1.2 L
Cat. #609

InstaStain® Ethidium Bromide
7 x 7 cm sheets
Cat. #2001 For 40 gels
Cat. #2002 For 100 gels

InstaStain® Blue
7 x 7 cm sheets
Cat. #2003 For 40 gels
Cat. #2004 For 100 gels

Melt & Pour UltraSpec-Agarose™
Consists of 0.8% electrophoretic grade UltraSpec-Agarose™ in TAE buffer, pH 7.8.
Cat. #601 400 mL
Cat. #601-B 5 x 400 mL

UltraSpec-Agarose™
DNA Electrophoresis Grade.
Cat. #605-3g 3 grams
Cat. #605-20g 20 grams
Cat. #605-100g 100 grams
Cat. #605-500g 500 grams

Electrophoresis Buffer 50x TAE
Cat. #607 Yields 5 Liters
Cat. #607XL Yields 25 Liters

TBE Powdered Electrophoresis Buffer
Cat. #607-1 Yields 5 Liters

DNA Standard Marker
Base pairs: 6751, 3652, 2827, 1568, 1118, 825, 630.
Cat. #750-1 For 20 gels (20 µg)

EdvoQuick™ DNA Ladder
Cat. #756 For 20 gels

Electrophoresis Reagent Package with FlashBlue™
Includes: UltraSpec-Agarose™ (10 g), 100 mL Electrophoresis Buffer (50x), 0.5 mL Gel Loading (10x) Solution with tracking dye, and FlashBlue™ stain (for 1.2 L).
Cat. #604

Gel Loading (10X) Solution
Cat. #606 Yields 5 mL

Practice Gel Load Solution
Cat. #606-P 5 mL

Ready-to-Load™ Digested DNAs

Lambda DNA
20 µg for 20 gels
Cat. #709 Digested with *Eco*RI
Cat. #710 Digested with *Eco*RI and *Hind*III
Cat. #711 Digested with *Hind*II

Restriction Enzymes

Dryzymes®
Lyophilized, contains 1500 units.
Cat. #715 *Eco*RI
Cat. #716 *Hind*III
Cat. #717 *Bam*HI

Restriction Enzyme Reaction Buffer
Cat. #610 For 200 extractions

Polymerase Chain Reaction (PCR)

PCR EdvoBeads™
Cat. #625 25 Beads

PCR EdvoBeads™ PLUS
Replenisher for kits #330, 332, 333, 345, 858, and 962.
Cat. #PLUS 25 Beads

Proteinase K
Cat. #626

"Universal" DNA Extraction Buffer
Cat. #627 For 50 extractions

Thin-walled PCR Microtest Tubes
Cat. #642.2 100/pkg (0.2 mL)

Bacterial Transformation

Luria Broth Media
Cat. #611 100 grams

Bacterial Plating Agar
Plain agar, no nutrients.
Cat. #612 30 grams

X-Gal
Cat. #614 250 mg

ReadyPour™ Luria Broth
Agar Base
Cat. #615 170 mL

Agar Base with Ampicillin
Cat. #616 170 mL

BactoBeads™

***E.coli* JM109 BactoBeads™**
Cat. #726 5 beads

***E.coli* GFP Host BactoBeads™**
Cat. #728 5 beads

***E.coli* OP50 BactoBeads™**
(for *C.elegans*)
Cat. #729 5 beads

***Serratia marcescens* BactoBeads™**
Cat. #741 5 beads

***Bacillus subtilis* BactoBeads™**
Cat. #743 5 beads

Protein Electrophoresis

Precast Polyacrylamide Gels
4-20% Tris-Glycine-SDS Precast Polyacrylamide Gel, 9 x 10 cm, 10 Wells, Well Volume is 30 µL.
Cat. #650 1 gel
Cat. #651 3 gels
Cat. #652 6 gels

Tris-glycine-SDS Powdered Buffer
Enough to make 5 L of 1X buffer.
Cat. #655

Tris-glycine Powdered Buffer
Enough to make 5 L of 1X buffer.
Cat. #656

Protein Standard Marker (Prestained Lyophilized)
Cat. #752 For 6 gels

Protein InstaStain®
For staining gels ranging from 8x8 cm to 13x13 cm.
Cat. #2016 For 15 gels

Quick Plant™ Seeds

Brassica Quick Plant™ Seeds
Cat. #1226 200 seeds

Lab Supplies

Sterile Conical Tubes
Cat. #648 15 mL, Bag of 25

Microtest Tube Rack
Cat. #639 Single rack

Microtest Tubes
500 snap-top tubes (1.5 mL)
Cat. #630

Thin-walled PCR Microtest Tubes
Cat. #642.2 100/pkg (0.2 mL)

Microtiter Plates
Six transparent 96-well plates.
Cat. #666

Small Petri Plates
60 x 15 mm, 1 shelf pack of 20
Cat. #633

Large Petri Plates
100 x 15 mm, 1 shelf pack of 20
Cat. #643

Waterbath Floats
Cat. #689 Set of 2, 11 x 8 cm

Nonmercury Thermometer
Graduated in 1° C divisions.
Range of -20° C to 110° C.
Cat. #765

Safety Supplies

KN95 Face Masks
KN95 Face Mask, Adjustable Nosepiece, Elastic Knitted Ear Loops.

50 Masks per Box, Masks Packed 2 per Poly Pack (25 Poly Packs)

**These masks enhance safety, but wearing one does not guarantee the filtering out of all particles. Not to be confused with N95 masks*.*
Cat. #KN95

Disposable Nitrile Gloves
Latex free for sensitive allergy. 100/pkg. ***NOTE: Limited availability due to COVID-19.***
Cat. #774-1 Small
Cat. #774-2 Medium
Cat. #774-3 Large
Cat. #774-4 X-Large

UV Safety Goggles
Laboratory safety goggles with UV light protection.
Cat. #631

INDEX

INDEX

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