



10TH ANNIVERSARY



# *miniPCR bio<sup>TM</sup>: 10 years of impact*

Ten years ago, our company launched with the miniPCR®: DNA technology that scientists of all stripes can bring wherever their curiosity leads them. Since then, we've traveled with you to forests, classrooms, kitchen tables, ocean depths, and even outer space. We've given you new tools to push your science further, and you've surprised us by applying them in new and creative ways.

Thank you for joining the DNA revolution. We look forward to shaping the next decade together.



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Prices are in US dollars, are subject to change without notice, and do not include sales tax or shipping charges.

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# Featured Product: miniPCR® Thermal Cyclers



## Sleek design

A modern take on the classic miniPCR® design. Open and transparent, not a black box.



## Dazzling performance

The latest technology for peak results and unmatched durability.



## Friendly as ever

Expanded software compatibility helps everyone enjoy the full miniPCR® experience.





## New miniPCR® thermal cyclers

Meet an updated classic: our new and improved miniPCR® machines. The transparent design that you love, with a modern look and expanded features:

- Universal compatibility with Windows, Mac, iOS, Chromebook, and Android devices
- Wireless connectivity via Bluetooth® on both models
- Extreme durability with drop-resistant construction

You'll be delighted - whether you're a longtime fan or new to the DNA revolution!



### CONNECTED

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Bluetooth®  
enabled



### DURABLE

---

3-year  
warranty



### PORTABLE

---

Weighs under a pound and  
fits in the palm of your hand



### RELIABLE

---

Published,  
peer-reviewed results



### AFFORDABLE

---

One for every  
budget

# Good things in small packages



## mini8X thermal cycler

QP-1000-08  
QP-1000-48 - set of 4

Our updated take on the classic miniPCR®. A personalized 8-well PCR experience for maximum engagement, now adding Bluetooth® and iOS support. Built to last even longer, from classroom to jungle.



## mini16X thermal cycler

QP-1016-16  
QP-1016-46 - set of 4

A nod to the past with an eye to the future. 16-well capacity, plus the latest technology and design for peak performance and durability. The ultimate miniPCR® thermal cycler.

### FULLY FEATURED THERMAL CYCLERS

	mini8X	mini16X
Number of samples	8	16
Compatible with all standard PCR reagents and consumables	✓	✓
Heated lid	✓	✓
Compatible with 0.2 mL 8-tube strips	✓	✓
Universal power supply	✓	✓
Windows, Mac, and Android compatible	✓	✓
Chromebook compatible via Play Store	✓	✓
iPhone and iPad compatible	✓	✓
USB connectivity	✓	✓
Bluetooth connectivity	✓	✓
3-year warranty	✓	✓

Visit [www.minipcr.com](http://www.minipcr.com) for up-to-date pricing and promotions.

miniPCR® apps

# YOUR PCR ON YOUR DEVICE

With the miniPCR® app, programming is simple and intuitive.

- > Use your own device
- > Program in seconds
- > Monitor reactions in real time
- > Connect to multiple machines simultaneously
- > Store unlimited programs



## Empower your students

For new users, unique features make PCR accessible with temperature graphed in real time, animations of what is occurring at the molecular level, and a graph showing the estimated number of DNA copies.

Free downloads



# Three options to meet all your gel electrophoresis needs



**Bandit™ STEM**  
electrophoresis kit

The most affordable way to bring gel electrophoresis anywhere.



**blueGel™**  
electrophoresis and  
visualization system

The complete go-to classroom electrophoresis system.



**GELATO™**  
electrophoresis and  
visualization system

A professional grade electrophoresis system for the molecular biology lab.



Access free gel electrophoresis tutorials



## STEM electrophoresis kit

The **Bandit™ STEM electrophoresis kit** allows students to:

- Assemble a gel electrophoresis system
- Learn fundamental biotech skills
- Integrate STEM practices

Run your own samples or use our carefully designed dye-based labs (page 30) to teach essential biotechnology with one of our most innovative and budget-conscious tools yet.

QP-1400-01

QP-1400-04 - Set of 4

QP-1400-08 - Set of 8

4AA30 - USB-C power supply

- Safe and convenient USB power supply—no batteries needed!
- Durable and reusable
- Build it to understand it!

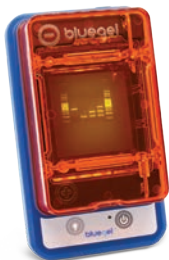
SEE ALSO  
BANDIT™ BIOTECH BUNDLES  
ON PAGE 20



# blueGel™ electrophoresis & visualization system

blueGel™ is compact, durable, and easy to use. By integrating gel electrophoresis and blue light transillumination into an all-in-one device, you can see results instantly while still running your gel. There is no need for a separate imaging system, time-consuming staining and destaining, or harmful ethidium bromide and UV light.





## blueGel™ electrophoresis with built-in transilluminator

QP-1500-01

QP-1500-41 - set of 4

QP-1500-28 - set of 8

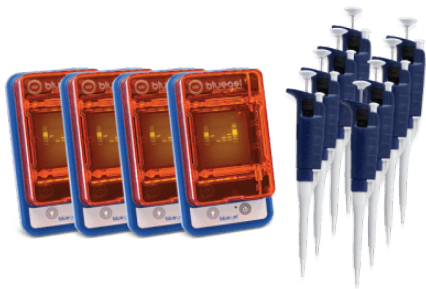
- Fast results with real-time visualization
- Error-proof casting and loading
- Integrated power supply
- Safe DNA staining (e.g. SeeGreen™ or GelGreen®)
- Fold-a-View™ photo documentation hood



## blueGel™ set of 4 with carrying case

LB-1500-04

- 4 blueGel™ electrophoresis systems
- Carrying case with protective semi-rigid shell
- Custom foam inserts, handle, and shoulder strap



## blueGel™ electrophoresis classroom startup pack

QP-1500-44

- 4 blueGel™ electrophoresis systems
- 8 micropipettes (2-20 µl), H-style

# GELATO™

## Professional gel electrophoresis and visualization system compatible with safe green dyes

### RUN. VIEW. SNAP. CUT. ALL IN ONE.

A full-sized, integrated system for ultra-fast runs and eye-popping bands. Publication-quality results in a compact, space-saving footprint.

QP-1600-01  
QP-1600-04 - set of 4

- Integrated transilluminator
- Direct gel documentation
- Built-in power supply up to 135 V
- Safe band cutting
- Seamless casting platform



	blueGel™	GELATO™
Gel size	6 x 6 cm	12 cm x 6 cm (or two 6 cm x 6 cm)
Voltage	fixed	variable 50-135 V
Number of samples	up to 26	up to 50
Built-in transillumination	●	●
Compatible with safe green dyes	●	●
Fold-a-View™ imaging hood	●	●
Multichannel compatible		●
Cutting tray and goggles		●
Timer		●

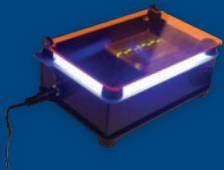
Visit [www.minipcr.com](http://www.minipcr.com) for up-to-date pricing and promotions.



# blueBox™ blue light transilluminators

Visualize DNA safely and efficiently with high sensitivity. Say goodbye to ethidium bromide and harmful UV light! Compatible with safe dyes such as GelGreen®, SeeGreen™, SYBR® Green, SYBR® Safe, GreenView™, GreenView™ Plus, EvaGreen®, GR Safe, Gel Star™, SYPRO® Ruby, and others.

	blueBox™ S	blueBox™ Pro
Viewing area	9 cm x 10 cm	14 cm x 11.4 cm
Compatible with SYBR® family green DNA stains	●	●
Includes Fold-a-View™ imaging hood	●	●
Adjustable hinged lid for easy band cutting and gel excision	●	●



**blueBox™ S**  
transilluminator  
with imaging hood

QP-1700-01



**blueBox™ Pro**  
transilluminator  
with imaging hood

QP-1700-03



**Fold-a-View™** photo  
documentation hood

Included with blueBox™ transilluminators

Foldable darkroom allows you to take high quality gel images with your cell phone.

# P51™

## P51™ Molecular Glow Labs™

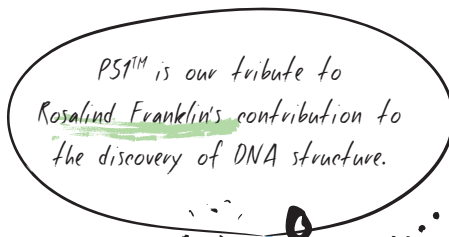
NOW POWERED  
VIA BATTERY OR USB

A whole new approach to biology inquiry using fluorescence

Discover a completely new approach to studying biological structures, functions, and processes. Fluorescent outputs give students fast visual results in labs that tackle key areas across the biology curriculum. Introduce authentic hands-on investigations where previously worksheets and paper models were the norm. Make biology glow™!

Investigate:

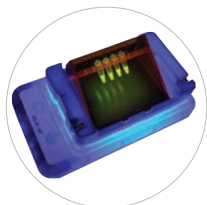
- DNA structure
- Enzyme activity
- Transcription and translation
- Quantitative PCR
- And more...





## P51™ Molecular Fluorescence Viewer QP-1900-01 / QP-1900-08 - set of 8

This small, handheld blue-light illumination system opens the world of fluorescence to your students.



## GlowRack™ tube adapter QP-1500-18

This tube holder with integrated blue-light filter allows you to visualize fluorescent samples from BioBits® and P51™ Molecular Glow Labs™ using your blueGel™ electrophoresis system's blue light illuminator.

	P51™ Molecular Fluorescence Viewer	GlowRack™ tube adapter for blueGel™
Design allows for pipetting while tubes are in the viewer	✓	✓
Capacity	8 tubes	8 tubes
Power supply	✓ USB-C or 9 V battery	✓ included with blueGel™
Orange filter for BioBits® and P51™ Molecular Glow Labs™	✓	✓
Yellow filter for enhanced viewing of yellow and green fluorescence	✓	
Handheld, battery operated	✓	

*NOTE: P51™ and BioBits® labs can also be performed on a blueGel™ electrophoresis system with the standard orange cover.*



### Micropipettes · H-style

Reliable everyday performance.

- Accurate and durable
- Fully adjustable
- Ergonomic design
- Compatible with standard tips
- Calibration tool included



### Micropipettes · A-style

Designed for the pros.

- Advanced ergonomic design
- 4-digit volume adjustment
- Very low operating force
- Compatible with standard tips
- Calibration tool included



### Fixed volume minipipettes

Affordable accuracy for learners.

- Look and feel of variable volume micropipettes
- Eliminates volume adjustment errors
- Built-in tip ejector
- Use standard tips

Model	Volume range (µL)	Catalog No.
H10	1 - 10	QP-1001-05
H20	2 - 20	QP-1001-01
H200	20 - 200	QP-1001-03
H1000	100 - 1000	QP-1001-02
Set of 3	H20, H200, H1000	QP-1001-04
Rack, H-style	holds 9	QP-1001-06
Set of 4 with rack	H10, H20, H200, H1000	QP-1001-07

Model	Volume range (µL)	Catalog No.
A10	0.5 - 10	QP-1002-05
A20	2 - 20	QP-1002-01
A200	20 - 200	QP-1002-03
A1000	100 - 1000	QP-1002-02
Set of 4	A10, A20, A200, A1000	QP-1002-04
Rack, A-style	holds 9	QP-1002-06
Set of 4 with rack	A10, A20, A200, A1000	QP-1002-07

Model	Volume range (µL)	Catalog No.
4 µL minipipette	Fixed	QP-1003-01
10 µL minipipette	Fixed	QP-1003-02
20 µL minipipette	Fixed	QP-1003-03
4 µL, set of 10	Fixed	QP-1003-10
10 µL, set of 10	Fixed	QP-1003-20
20 µL, set of 10	Fixed	QP-1003-30

Visit [www.minipcr.com](http://www.minipcr.com) for up-to-date pricing and promotions.



## Gyro™ microcentrifuge

This basic microcentrifuge will get you spinning fast.

QP-1800-01

- Single speed: 10,000 rpm
- Robust and user-friendly
- Holds 0.2, 0.5, 1.5, 2.0 ml tubes



## Gyro™ Plus variable speed microcentrifuge

Take our yellow submarine for a spin!

QP-1800-02

- Variable speed: up to 12,000 rpm
- User-friendly LED interface
- Holds 0.2, 0.5, 1.5, 2.0 ml tubes

	Gyro™	Gyro™ Plus
Speed (RPM)	10,000	1,000 to 12,000
Maximum RCF	4,800	6,900
6 x 1.5 ml microtube rotor	●	●
16 x 0.2 ml PCR tube rotor	●	●
6 adapters for 0.5 ml tubes	●	●



## miniPCR® Lab in a Box™ Kit #2

PCR and electrophoresis, ready to go.

LB-2500-08 - with mini8X thermal cycler

LB-2516-16 - with mini16X thermal cycler

- miniPCR® mini8X or mini16X thermal cycler
- blueGel™ electrophoresis system with integrated transilluminator
- Set of 3 micropipettes, 1-10  $\mu$ l, 2-20  $\mu$ l, 20-200  $\mu$ l
- 4 racks of 96 micropipette tips: 2 x 0.5-10  $\mu$ l, 2 x 2-200  $\mu$ l
- Fieldable carrying case with protective foam inserts (17" x 15" x 7")



## miniPCR® Lab in a Box™ Kit #4

A biotech classroom on wheels.

LB-5000-08 - with mini8X thermal cyclers

LB-5016-16 - with mini16X thermal cyclers

- 4 miniPCR® mini8X or mini16X thermal cyclers
- 4 blueGel™ electrophoresis systems with integrated transilluminators
- 8 micropipettes, 2-20  $\mu$ l
- 1 micropipette, 20-200  $\mu$ l
- 1 micropipette, 1-10  $\mu$ l
- Rugged and fieldable carrying case with protective foam inserts (24" x 17" x 10")



## miniPCR® DNA Discovery System™

The essential biotech toolkit  
for your lab or classroom.

QP-2000-08 - with mini8X thermal cycler  
QP-2016-16 - with mini16X thermal cycler  
QP-2000-14 - 4-unit mini8X bundle  
QP-2016-26 - 4-unit bundle with mini16X

- miniPCR® mini8X or mini16X thermal cycler
- blueGel™ electrophoresis system with integrated transilluminator
- 2-20  $\mu$ l micropipette



## miniPCR® DNA Discovery System™ Pro

Your professional DNA analysis  
toolkit.

QP-2020-16

- miniPCR® mini16X thermal cycler
- GELATO™ electrophoresis and visualization system



### miniPCR® Lab Starter Pack

Get your lab up and running.

QP-2500-08 - with mini8X thermal cycler

QP-2516-16 - with mini16X thermal cycler

- miniPCR® mini8X or mini16X thermal cycler
- blueGel™ electrophoresis system with integrated transilluminator
- 3 micropipettes: 1-10  $\mu$ l, 2-20  $\mu$ l, 20-200  $\mu$ l
- Consumables:
  - Agarose, electrophoresis grade, 20 g
  - TBE electrophoresis buffer powder, makes 3 L
  - SeeGreen™ DNA gel stain, 20,000X in water, 200  $\mu$ l
  - Microtubes 1.5 ml, bag of 500
  - PCR tubes 0.2 ml, bag of 100
  - 200  $\mu$ l micropipette tips, 2 racks of 96
  - 10  $\mu$ l micropipette tips, 2 racks of 96

### miniPCR® Lab Starter Pack Plus

Add a Gyro™ Plus.

QP-2500-09 - with mini8X thermal cycler

QP-2516-26 - with mini16X thermal cycler

- miniPCR® mini8X or mini16X thermal cycler
- blueGel™ electrophoresis system with integrated transilluminator
- 3 micropipettes: 1-10  $\mu$ l, 2-20  $\mu$ l, 20-200  $\mu$ l
- Gyro™ Plus microcentrifuge
- Consumables:
  - Agarose, electrophoresis grade, 20 g
  - TBE electrophoresis buffer powder, makes 3 L
  - SeeGreen™ DNA gel stain, 20,000X in water, 200  $\mu$ l
  - Microtubes 1.5 ml, bag of 500
  - PCR tubes 0.2 ml, bag of 100
  - 200  $\mu$ l micropipette tips, 2 racks of 96
  - 10  $\mu$ l micropipette tips, 2 racks of 96

Visit [www.minipcr.com](http://www.minipcr.com) for up-to-date pricing and promotions.



# miniPCR® Classroom Packs

Take the guesswork out of setting up your classroom. miniPCR® Classroom Packs make ordering a breeze.



	miniPCR® Starter Classroom Pack	miniPCR® Biotech Classroom Pack	miniPCR® Premium Classroom Pack
	QP-2500-16	QP-2500-28	QP-2500-38
miniPCR® thermal cyclers	2 mini16X	4 mini8X	8 mini8X
blueGel™ electrophoresis systems	4	8	8
Microcentrifuge	1 Gyro™	2 Gyro™	2 Gyro™ Plus
Student micropipettes	4 H2O	8 H2O	16 H2O
Teacher pipette set	1 H10 1 H20 1 H200	1 H10 1 H20 1 H200	1 H10 1 H20 1 H200 1 H1000
Micropipette stand	-	-	2
200 µl tips	4 racks	8 racks	16 racks
10 µl tips	2 racks	2 racks	2 racks
1000 µl tips	-	-	2 racks

# Bandit™ Biotech Bundles

It's a biotech bootcamp in one convenient bundle. With three size options, you can shop the bundle that's right for your classroom.



	Bandit™ Biotech Bundle	Bandit™ Biotech Classroom Pack	Bandit™ Biotech Premium Pack
	QP-1410-01	QP-1410-02	QP-1410-03
Bandit™ STEM Electrophoresis Kits	1	4	8
20 µl minipettes	-	1	1
10 µl minipettes	1	4	8
Bag of 100 micropipette tips (2-200 µl)	1	1	2
Sets of micropipetting practice dyes: blue, yellow, and red (5 ml each)	1	1	3
Micropipette art cards	1	8	8
Molecular Rainbow Dye Electrophoresis Lab	-	1	1
Silicone practice gels	-	-	10
USB-C power supply	-	4	8

Visit [www.minipcr.com](http://www.minipcr.com) for up-to-date pricing and promotions.

# Free expert advice

We are here to help! Schedule a 15-30 minute video conference with a miniPCR bio™ scientist and get personalized equipment or curriculum recommendations.



*"The scientists and educators from miniPCR were able to help me get the most from my budget as well as provide advice and suggestions for several of the labs. The personal attention and ability to talk with a real person reflected how they value their service and their customers."*

-Debbie Brewer, Science Department Chair at Lumen Christi High School



**Book a demo!**



Tubes	Quantity	Catalog No.
1.5 ml microtubes	bag of 500	CM-1000-03
1.5 ml microtubes, sterile	bag of 50	6AA02
0.2 ml PCR tubes, thin walled	bag of 100	CM-1000-01
0.2 ml PCR tubes, thin walled	bag of 1000	2AA21
0.2 ml 8-strip PCR tubes with strip domed caps	bag of 12	6AA45
0.2 ml 8-strip PCR tubes with attached flat caps	bag of 8	6AA94

Micropipette tips	Quantity	Catalog No.
0.5-10 $\mu$ l micropipette tips	2 racks of 96 tips	CM-1001-05
2-200 $\mu$ l micropipette tips	2 racks of 96 tips	CM-1001-01
100-1000 $\mu$ l micropipette tips	2 racks of 100 tips	CM-1001-03
2-200 $\mu$ l micropipette tips	bag of 100	CM-1001-10
10 $\mu$ l filtered sterile micropipette tips	rack of 96	4AA75
20 $\mu$ l filtered sterile micropipette tips	rack of 96	4AA76
200 $\mu$ l filtered sterile micropipette tips	rack of 96	4AA77
1000 $\mu$ l filtered sterile micropipette tips	rack of 96	4AA78

miniRacks	Quantity	Catalog No.
Orange	1 PCR tube rack	CM-1003-01
Green	1 PCR tube rack	CM-1003-02
Blue	1 PCR tube rack	CM-1003-03
Pink	1 PCR tube rack	CM-1003-04
Assorted set of 8	8 PCR tube racks	CM-1003-05



## DNA extraction

	Volume	Catalog No.
Ultrapure Nuclease-Free Water	1 ml	RG-1021-01
X-Tract™ DNA Extraction Buffer	1 ml	RG-1020-01
DPX™ DNA Extraction Buffer	1.2 ml	RG-1020-02



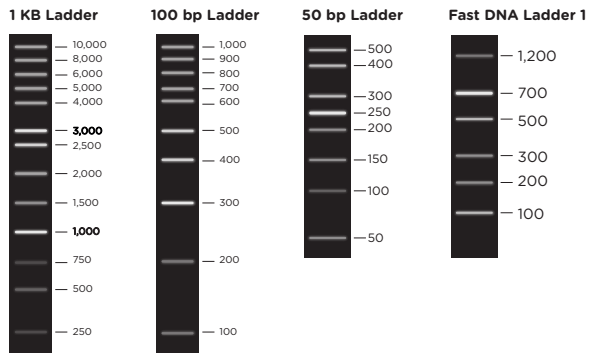
## PCR

	Volume	Catalog No.
EZ PCR Master Mix, 5X, Load-Ready™	240 µl	RG-1000-01
Hot Multiplex PCR Master Mix, 5X	1 ml	RG-1010-01
PCR Master Mix, 2X, Clear	1 ml	RG-1010-02
Ultrapure Nuclease-Free Water	1 ml	RG-1021-01

*"miniPCR Learning Labs are so robust. I can always count on the kids getting fantastic results."*

-Jaki Burns, Biology and Genetics Teacher at Neuqua Valley High School





## DNA ladders and gel loading dye

Catalog No.

50 bp Ladder	500 $\mu$ l, Load Ready™	RG-1002-02
100 bp Ladder	100 $\mu$ l, Load Ready™	RG-1001-01
	500 $\mu$ l, Load Ready™	RG-1001-02
1 kb Ladder	500 $\mu$ l, Load Ready™	RG-1002-01
Fast DNA Ladder 1	150 $\mu$ l, Load Ready™	RG-1003-01
Gel Loading Dye, Blue, 10X	1 ml	RG-1502-01

## TBE electrophoresis buffer

New powder formulation. Just add water!

- Stable for 3 years at room temperature
- Recommended buffer for Bandit™ and blueGel™

## TBE electrophoresis, powder

Catalog No.

TBE buffer, makes 600 mL	5.1 g	RG-1502-04
TBE buffer, makes 3 L	25.5 g	RG-1502-05

## Gel electrophoresis reagents

### Agarose, electrophoresis grade

Agarose Powder	20 g	RG-1500-02
Agarose Tabs™	10 tablets	RG-1500-03
Agarose Tabs™	50 tablets	RG-1500-05



### All-in-One Agarose Tabs™

SeeGreen™ All-in-One Agarose Tabs	2 tablets	RG-1500-22
SeeGreen™ All-in-One Agarose Tabs	8 tablets	RG-1500-21
SeeGreen™ All-in-One Agarose Tabs	20 tablets	RG-1500-20
GelGreen® Agarose Tabs™	2 tablets	RG-1500-12
GelGreen® Agarose Tabs™	8 tablets	RG-1500-11



### Nucleic acid stains

GelGreen® Nucleic Acid Stain, 10,000X	200 µl	RG-1550-01
SeeGreen™ Nucleic Acid Stain, 20,000X	200 µl	RG-1550-10



### Electrophoresis reagent bundles

Electrophoresis Reagents Kit: Starter	TBE, 5.1 g / 8 SeeGreen™ Agarose Tabs	RG-1510-02
Electrophoresis Reagents Kit: Bulk	Agarose, 20 g / TBE 25.5 g / SeeGreen™ Stain, 200 µl	RG-1510-03

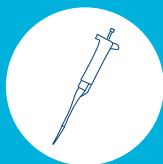


# Learning Labs from miniPCR bio™

From gel electrophoresis and PCR to synthetic biology and CRISPR/Cas, your students will implement real biotechnology while exploring fundamental biology concepts.

Our affordable hands-on lab kits provide:

- Reagents for 8 lab groups or 32 students
- Free and comprehensive curriculum
- Classroom-friendly lab protocols
- Unmatched support



Micropipetting



Dye electrophoresis  
labs



DNA gel  
electrophoresis



PCR



Research  
projects



@home



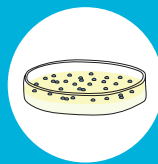
DNA  
digestion



P51™  
Glow Labs™



BioBits®  
cell-free system



Bacterial  
transformation



CRISPR/Cas



# Featured new Learning Labs™

## True Blue™ Bacterial Transformation Lab

KT-1802-01



Transform bacteria and observe a phenotypic change. Featuring a simple protocol that requires minimal equipment and teacher prep.

**A simple and robust transformation lab!**

Learn more on p. 44

## Dye Electrophoresis Lab: Mendel's Peas

KT-1403-01

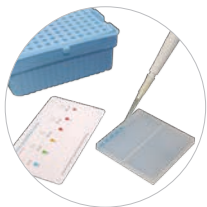


This gel electrophoresis lab connects traditional Mendelian genetics with our modern understanding of DNA and inheritance.

**Confirm which gene determines pea shape!**

Learn more on p. 30

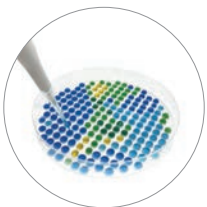
# Micropipetting



## Micropipetting 101 KT-1510-10

Practice pipetting with reusable practice cards and gels. Kit includes 20 reusable pipetting practice cards, 10 reusable silicone practice gels, practice dye, tips, and tubes.

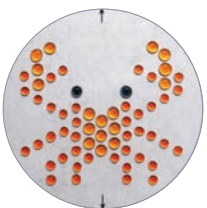
Middle school, general high school, advanced high school, college  
Micropipetting



## Micropipetting @home: Microliter Madness KT-1101-01 Set of 10 KT-1101-10

Make micropipetting fun! Kit contains reusable supplies for an individual to complete three engaging activities: micropipetting practice, gel loading practice, and pipette art. Compatible with 4  $\mu$ L and 10  $\mu$ L minipettes.

Middle school, general high school, advanced high school, college  
Micropipetting



## Micropipette Art: Full STEAM Ahead! KT-1510-21

A classroom's worth of supplies to introduce and practice micropipetting in a fun and engaging way. Follow our art patterns or create your own microliter masterpiece! Kit includes red, yellow, and blue practice dyes (20 mL ea.), 16 micropipette art cards, and 100 tips. Compatible with 10  $\mu$ L minipettes.

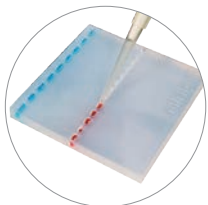
Middle school, general high school, advanced high school, college  
Micropipetting

# Micropipetting



## Micropipetting practice cards KT-1510-12 - set of 20

Practice micropipetting with these reusable waterproof cards. Card features instructions for using a micropipette on one side and a micropipetting exercise on the other side.



## Silicone practice gels KT-1510-13 - set of 10

Practice gel loading with durable and reusable silicone gels.



## Micropipette art cards KT-1510-20 - set of 8

Set of 8 reusable art cards for micropipetting art practice. Cards can be combined with free downloadable art patterns.



## Micropipetting practice dyes KT-1510-02 - 5 ml each red, blue, and yellow dye

Colored dyes to practice micropipetting and gel loading.



**Download our free  
micropipetting resources**



# Dye Electrophoresis Learning Labs™

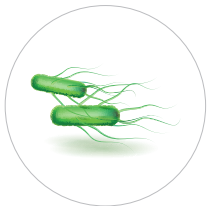


## Dye Electrophoresis Lab: Molecular Rainbow KT-1400-01

Students use gel electrophoresis to separate molecular mixtures.

Middle school, general high school

Gel electrophoresis



## Dye Electrophoresis Lab: Microbe Hunters KT-1401-01

Identify whether microbes collected from surfaces on the International Space Station pose any threat to the astronaut crew.

Middle school, general high school

Gel electrophoresis



## Dye Electrophoresis Lab: Cat Genetics KT-1402-01

Explore the link between genotype and phenotype in a family of cats.

Middle school, general high school

Gel electrophoresis



## Dye Electrophoresis Lab: Mendel's Peas KT-1403-01

Connect Mendel's famous experiments with our modern understanding of DNA and inheritance

Middle school, general high school

Gel electrophoresis

# DNA Gel Electrophoresis Learning Labs™



## DNA Fingerprinting Lab: Shark Attack! KT-1500-03

Sharks have been menacing Australian beaches. Use DNA fingerprinting to understand the source of the attacks.

General high school  
Gel electrophoresis

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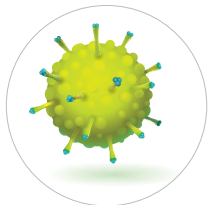


## Sickle Cell Genetics Lab: Diagnosing Baby Marie™ KT-1502-01

Students are presented with a fictional family's medical history and must work to make a genetic diagnosis for possible sickle cell disease.

General high school, advanced high school, college  
Gel electrophoresis

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## Viral Diagnostics Lab: Beating the Next Pandemic KT-1503-01

A new virus is sweeping the globe. Students act as healthcare providers and test patients for infection with the seasonal influenza or an emergent virus.

General high school, advanced high school, college  
Gel electrophoresis

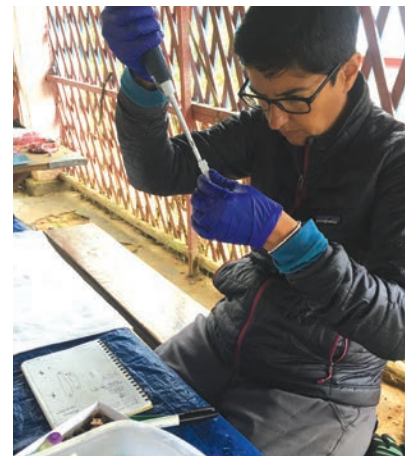
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# Real data. Unknown outcomes.

The best way for students to learn science is to do science. That's why we strive to bring you authentic scenarios, with data your students must analyze critically.

How do we bring authenticity to a gel electrophoresis lab? We partnered with top conservation geneticists from the Duke Lemur Center to present students with real data collected by scientists in Madagascar. Your students will perform some of the same analyses as the scientists to help track the fate of a species in the face of environmental change. Will they reach the same conclusions?

**Conservation Genetics Lab:  
Discovering Lemur Diversity (page 33)**



Scan to learn  
more about the  
research that  
inspired this lab!

# DNA Gel Electrophoresis Learning Labs™



## Electrophoresis Forensics Lab: Wrongfully Convicted? KT-1504-01

Was J.M. wrongfully convicted? Analyze DNA evidence from a closed case to determine if justice has been served.

General high school, advanced high school  
Gel electrophoresis

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## Conservation Genetics Lab: Discovering Lemur Diversity KT-1505-01

Analyze authentic field data to determine if a species of lemur thought to be extinct has been rediscovered.

General high school, advanced high school, college  
Gel electrophoresis

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## Dog Genetics Lab: Oodles of Labradoodles™ KT-1506-01

Explore the link between genotype and phenotype in a litter of puppies. Mendelian genetics has never been cuter!

General high school, advanced high school  
Gel electrophoresis

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# DNA Digestion Learning Labs™



## Restriction Digest Analysis Lab: Making the Cut KT-1507-01 - Coming soon

Use different restriction enzymes to digest a DNA plasmid. Then use gel electrophoresis to analyze your results and create a plasmid map.

General high school, advanced high school, college

Restriction digest, gel electrophoresis



## Chopped! Using CRISPR/Cas to Cut DNA KT-1801-01

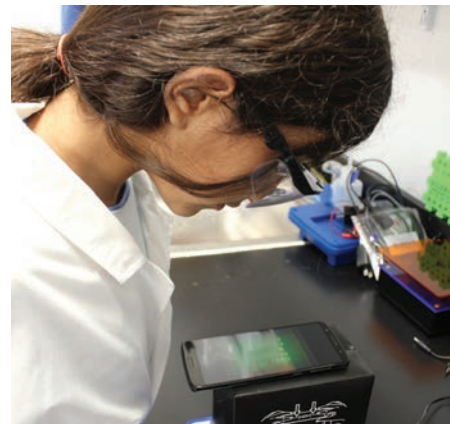
Use CRISPR/Cas in a test tube with a direct gel electrophoresis readout. Without any major prep or cells to culture, experiment directly with the gene targeting mechanism of CRISPR/Cas at the molecular level!

General high school, advanced high school, college

CRISPR/Cas, gel electrophoresis

*"miniPCR's online resources and curricular supports are excellent. These labs help me integrate biotechnology throughout my curriculum."*

-Leslie Prudhomme, Mass Insight Program Director



Visit [www.minipcr.com](http://www.minipcr.com) for up-to-date pricing and promotions.



# PCR Learning Labs™



## Crime Lab: Missy Baker Missing™ KT-1000-03

Make connections between genes and disease, personal identification, and the use of biotechnology for genetic analysis.

General high school, advanced high school, college

PCR, gel electrophoresis

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## Agricultural Monitoring Lab: A Case Study in Antibiotic Resistance KT-1010-01

Students establish whether farms are at risk from antibiotic-resistant bacteria.

General high school, advanced high school, college

PCR, gel electrophoresis

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## Forensics Lab: Analysis of the D1S80 VNTR KT-1009-01

Students must rule themselves out as a suspect! Use your own DNA to explore concepts of inheritance, DNA polymorphism, genetic diversity, and forensic analysis.

General high school, advanced high school, college

DNA extraction, PCR, gel electrophoresis

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## Food Safety Lab: Mars Colony at Risk! KT-1001-03

Help astronauts control an outbreak of pathogenic bacteria in space food bound for Mars!

General high school, advanced high school

PCR, restriction digest, gel electrophoresis

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# PCR Learning Labs™



## Plant Genetics Lab: Taking Mendel Molecular with Wisconsin Fast Plants® KT-1011-01

Investigate the genotypic basis of a phenotype using Wisconsin Fast Plants®.

General high school, advanced high school, college  
DNA extraction, PCR, gel electrophoresis



## GMO Detection Lab KT-1003-01

Fast and robust PCR-based GMO detection from your favorite foods.

General high school, advanced high school, college  
DNA extraction, PCR, gel electrophoresis



## miniPCR Sleep Lab™: Lark or Owl? KT-1005-01

Participate in an authentic investigation on the genetics of sleep.

Advanced high school, college  
DNA extraction, PCR, gel electrophoresis



## Genotype to Phenotype: PTC Taster Lab KT-1004-03

Use molecular techniques to determine whether you carry taster or non-taster alleles.

General high school, advanced high school, college  
DNA extraction, PCR, restriction digest, gel electrophoresis

# miniPCR® Research Projects

## Reagents and protocols to design your own investigation



### eDNA Project: Sampling Soil for Antibiotic Resistance KT-1012-02

Join a nationwide monitoring program that tests for antibiotic resistance genes in environmental soil samples. In this project-based lab, students collect soil samples and use PCR and gel electrophoresis to detect tetracycline resistance genes.

Advanced high school, college

DNA extraction, PCR, gel electrophoresis

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### Mushroom ID Project: Fungal DNA Barcoding Kit KT-1014-01

There are hundreds of thousands of mushrooms and other fungi to discover. This kit provides reagents needed to identify them using PCR to amplify the ITS barcoding region.

Advanced high school, college

DNA extraction, PCR, gel electrophoresis, DNA sequencing (not included)

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### Bacterial DNA Barcoding: 16S rRNA Amplification Kit KT-1015-01 - Coming soon

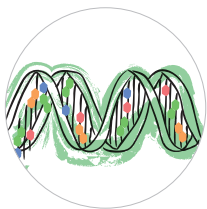
Starting with your own bacterial isolates, use PCR to amplify the 16S rRNA barcoding sequence. Follow this with DNA sequencing to uniquely identify bacterial species.

Advanced high school, college

DNA extraction, PCR, gel electrophoresis, DNA sequencing (not included)

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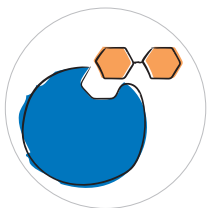
# P51™ Molecular Glow Labs™



## DNA Glow Lab™: Exploring DNA Structure KT-1900-01

Investigate how DNA sequence, temperature, and pH interact with the double helix. Move beyond paper models and investigate DNA structure directly!

General high school, advanced high school, college



## Enzyme Lab: $\beta$ -Gal Glow™ KT-1900-02

Use an inquiry-based approach to investigate enzyme activity. Measure the effect of pH, temperature, concentration, and competitive inhibition on enzyme reaction rates.

General high school, advanced high school, college



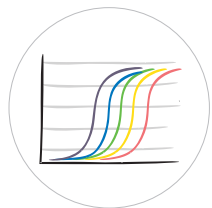
## Introduction to Fluorescence Lab: Glow Big or Glow Home KT-1900-04

How many molecules of fluorescein make a highlighted word glow? This skill-building lab serves as an introduction to fluorescence and its applications in biotechnology.

Middle school, general high school, advanced high school



# P51™ Molecular Glow Labs™

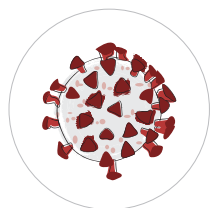


## qPCR Lab: Principles of Quantitative PCR KT-1900-05

Students will directly visualize amplification of DNA and will be able to calculate relative concentrations of DNA template. Explore qPCR using your existing PCR machine!

General high school, advanced high school, college

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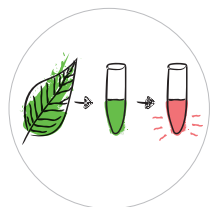


## COVID qPCR Lab: Detecting SARS-CoV-2 Infection KT-1900-06

Practice the techniques used in diagnosing patients for SARS-CoV-2 infection! Use PCR and the P51™ fluorescence viewer to get hands-on experience with qPCR principles and determine if fictional patients are infected with the SARS-CoV-2 virus.

General high school, advanced high school, college

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## Chlorophyll Lab: A Free Resource KT-1900-03

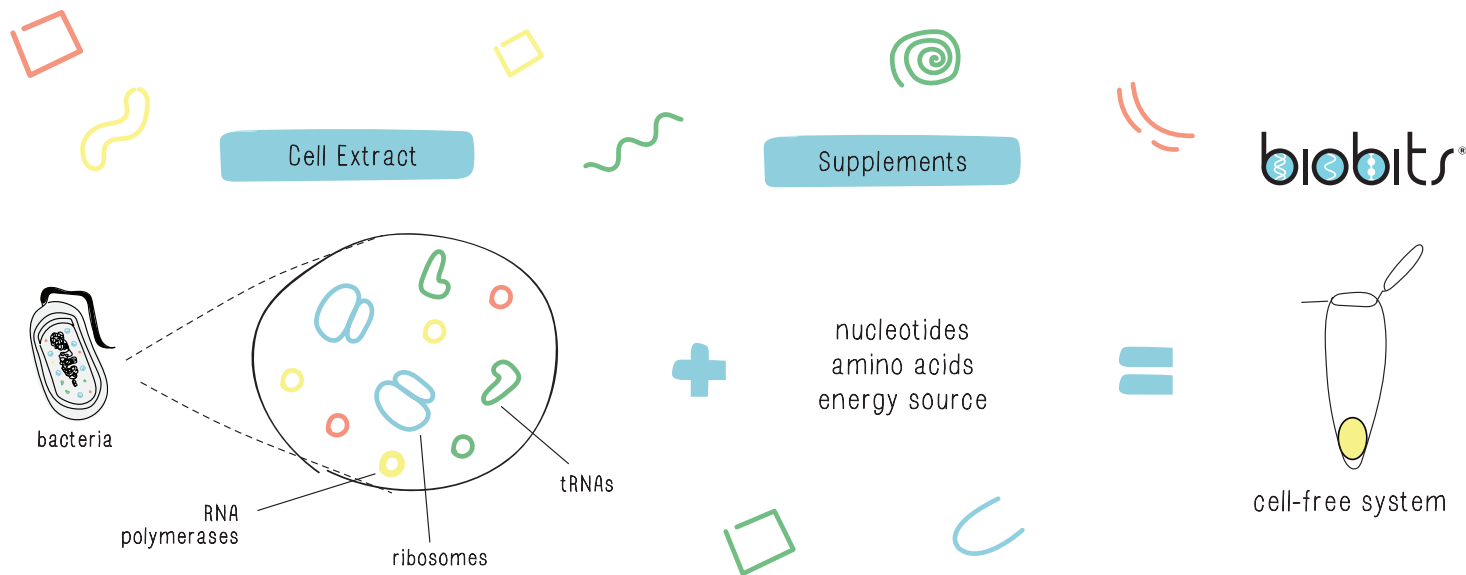
Use fluorescence to directly observe energy capture and transfer by natural photopigments—and be surprised at the result!

Middle school, general high school, advanced high school

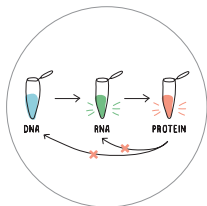
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BioBits® is an advanced synthetic biology system ready for the classroom. Cell-free technology allows users to synthesize proteins directly in a test tube by simply adding DNA. Simple to use and requiring minimal equipment, the BioBits® cell-free system lets you investigate fundamental biology concepts, hands on.



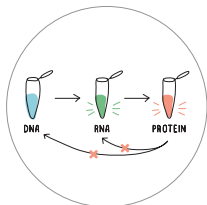
# BioBits® Learning Labs™



## BioBits®: Central Dogma classroom kit KT-1910-01

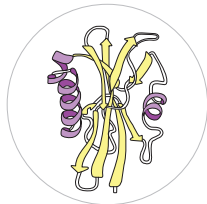
Fluorescent outputs allow students to directly visualize the flow of genetic information, from DNA to RNA to protein, all in real time. Classroom kit includes reagents for 8 lab groups.

General high school, advanced high school, college



## BioBits® @home: Central Dogma KT-1102-01 Set of 10 KT-1102-10

Get everything you need for one person to perform the BioBits® Central Dogma lab! @home kit includes includes reagents for two experiments, a P51™ Molecular Fluorescence Viewer, and a 4 µl minipette with tips.



## BioBits®: Protein Structure and Function KT-1910-03

Investigate the link between a protein's three-dimensional shape and its function by analyzing sequences and expressing colorful fluorescent proteins in a cell-free system.

General high school, advanced high school, college



## BioBits®: Antibiotic Resistance KT-1910-06

Explore antibiotic resistance at the biochemical level. Use antibiotics to disrupt cell processes and antibiotic resistance genes to restore them!

General high school, advanced high school, college



CRISPR/Cas gene editing technology has revolutionized modern biology. Now, your students can manipulate DNA using science that won the 2020 Nobel Prize in Chemistry and enables life saving gene therapies.

Don't settle for simulations. Put CRISPR/Cas in the hands of your students!



### Knockout smiles!

AP Biology students at Springside Chestnut Hill Academy in Pennsylvania successfully transformed cells with CRISPR technology to disable bacterial genes. The gene targeting event (or gene “knockout”) disrupted an enzyme that converts sugar into a blue product. Knockout bacteria are unable to break down this sugar and remain white.

Learn more about the Knockout! CRISPR/Cas lab on the next page.





## Knockout! A CRISPR/Cas Gene Targeting Lab

Full lab kit KT-1800-01  
Refill kit KT-1800-03  
Extra vial of cells RG-1800-02

Perform cutting-edge genome editing! This lab allows advanced students to use the CRISPR/Cas system to disrupt a gene in bacteria and observe the resulting phenotypic change.

Advanced high school, college

CRISPR/Cas, bacterial transformation



## Knockout! PCR Genotyping Experiment KT-1800-02

Optional follow-up to the Knockout! Lab. Confirm successful CRISPR/Cas gene targeting at the molecular level using PCR and gel electrophoresis.

Advanced high school, college

PCR, gel electrophoresis



## Chopped! Using CRISPR/Cas to Cut DNA KT-1801-01

Use CRISPR/Cas in a test tube with a direct gel electrophoresis readout. Without any major prep or cells to culture, experiment directly with the gene targeting mechanism of CRISPR/Cas at the molecular level!

General high school, advanced high school, college

CRISPR/Cas, gel electrophoresis



Access free CRISPR/Cas  
teaching resources



# Bacterial Transformation Labs

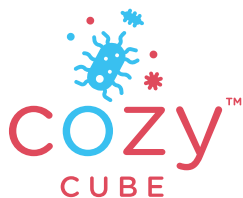
See also Knockout! on p.43



## True Blue™ Bacterial Transformation Lab KT-1802-01

Transform bacteria and observe a phenotypic change. Featuring a simple protocol that requires minimal equipment and teacher prep.

General high school, advanced high school, college



## The Cozy Cube™ Incubator QP-1800-10

- USB-powered
- Steady 37 °C
- Sturdy polystyrene container
- Holds up to 32 stacked 100 mm Petri dishes



*“miniPCR bio’s equipment really stands up to classroom use! We run a loaner program for teachers and our materials get used by hundreds of students per year. miniPCR bio’s equipment really lasts!”*

-Ashley Walter, Program & Partnership Coordinator  
at The Baxter Center for Science Education



Visit [www.minipcr.com](http://www.minipcr.com) for up-to-date pricing and promotions.

# Meet the makers!

Dilli, Sunil, and Nathalia (pictured from left to right) work tirelessly behind the scenes to optimize our reagents' performance so you have the best possible experience with our tools in your lab or classroom.

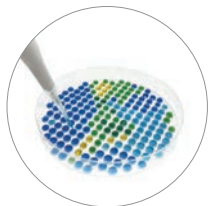
From troubleshooting new protocols to quality-checking our Learning Labs to stability testing our polymerases, their dedicated work demonstrates our commitment to enabling your science, wherever it takes place.



Meet the entire team at <https://www.minipcr.com/about/>



*Engaging hands-on activities  
for personalized learning*



### Micropipetting @home: Microliter Madness KT-1101-01 Set of 10 KT-1101-10

Make micropipetting fun! Kit contains reusable supplies for an individual to complete three engaging activities: micropipetting practice, gel loading practice, and pipette art. Compatible with 4  $\mu$ l and 10  $\mu$ l minipettes.

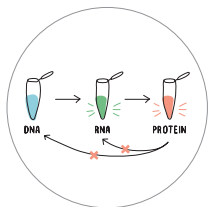
Middle school, general high school, advanced high school, college



### P51™ @home: STEM Explorations That GLOW KT-1100-03 Set of 10 KT-1100-10 Refill kit KT-1100-01

Lab includes three guided activities to introduce students to the fluorescence all around them. Kit contains a P51™ fluorescence viewer and supplies and reagents for an individual user.

Middle school, general high school



### BioBits® @home: Central Dogma KT-1102-01 Set of 10 KT-1102-10

Use cell-free technology to visualize gene expression in real time. Kit contains a P51™ fluorescence viewer, fixed volume micropipette, and supplies and reagents for an individual user to perform the lab twice.

General high school, advanced high school, college

# Learn on the miniPCR bio™ YouTube channel

- Step-by-step guides
- Educational webinars
- Product intros

Visit our channel at:  
<https://www.youtube.com/minipcrbio>



Making science accessible to everyone, everywhere



# Tutorials

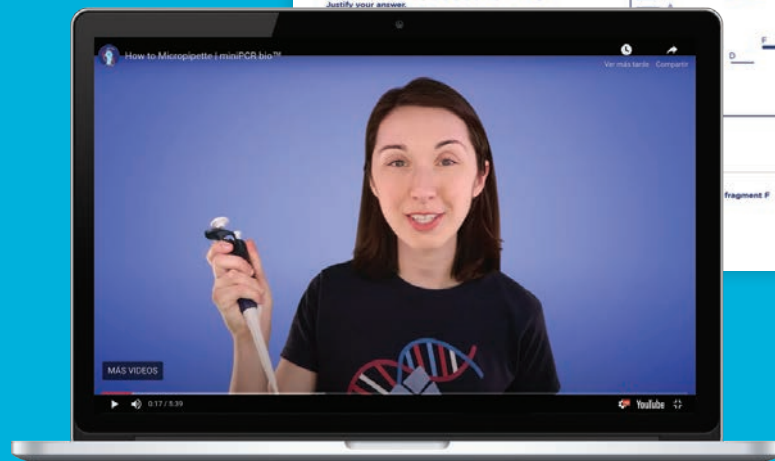
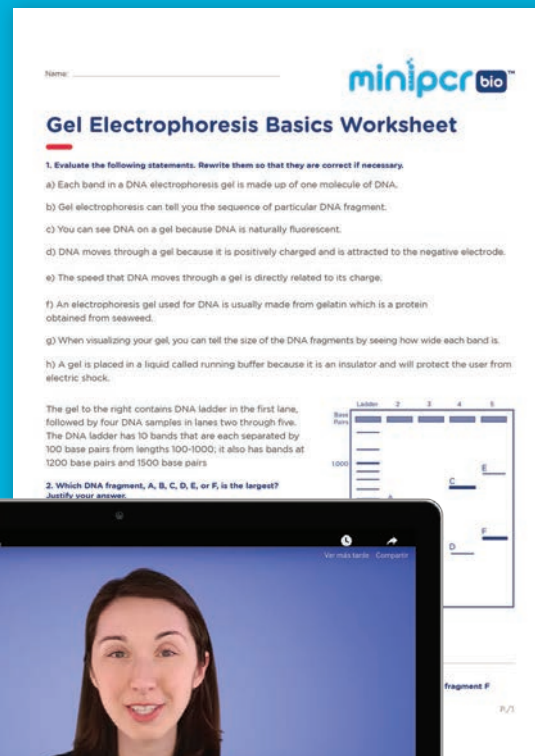
Introduce your students to core molecular biology techniques with carefully designed:

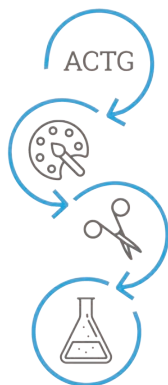
- Written explanations
- Videos
- Student worksheets

Topics include:

- Micropipetting
- Gel electrophoresis
- Polymerase chain reaction
- And more!

View the entire collection  
at [minipcr.com/tutorials](https://minipcr.com/tutorials)





# DNAdots™

*Simple explanations of  
modern genetic technologies*

- Two-page explanations of molecular biology topics written using nontechnical language
- Review, critical thinking, and discussion questions
- Topics include: CRISPR/Cas, RNA vaccines, DNA barcoding, and more!

Browse the entire collection  
at [dnadots.minipcr.com](https://dnadots.minipcr.com)



## CRISPR/Cas-9

### What it is:

#### Naturally occurring adaptive immunity in bacteria

The CRISPR/Cas-9 system is how bacterial immune systems learn from past experience. Bacteria use CRISPR to remember viral invaders so that Cas9 can attack them the next time they pose a threat. Bacteria can do this by specifically recognizing the invader's DNA and cutting it up.

CRISPR stands for *clustered regularly interspaced short palindromic repeats*; areas where a DNA sequence is repeated and separated by "spacer DNA". The CRISPR region functions like a working memory for bacteria, where the sequences of new invaders are added so a bacterium can recognize them as invading genetic material and eliminate them if ever encountered again. Once foreign genetic sequences are inserted in the CRISPR region, they are transcribed into small CRISPR RNAs (crRNA). crRNAs will bind to any invader that carries matching sequences, flagging foreign DNA to be destroyed. Cas9 is the enzyme that carries out the invader destruction: it is an endonuclease (an enzyme that cuts in the middle of a DNA strand) that cuts DNA wherever the crRNA guides it. In short, CRISPR is a region of the bacterial genome that can keep track of past invaders. Its crRNA product recognizes those invaders whenever they enter the cell again. Cas9 is the enzyme that cuts the foreign DNA, guided by crRNAs.

### How it is used:

#### Editing the genome

Scientists often spend a lot of time and energy trying to turn off specific genes so that we can better understand their functions. This can be difficult and involves a lot of trial and a lot of error. But recently, scientists have found a way to use the CRISPR/Cas9 system to make this task easier and more precise. The technique takes advantage of Cas9's ability to work as DNA scissors that we can target to any gene as long as we can make RNA to guide it. Researchers can target Cas9 to cut a specific gene by inserting "guide RNA" (gRNA) with the target gene's sequence. Cas9 will only cut where the gRNA binds. Researchers can now specifically "cut" any given gene. The gene won't stay cut forever, though. The cell's repair mechanisms will rejoin cut ends of the DNA, but these repair mechanisms tend to make mistakes, introducing mutations. The introduced mutations will often knock out the function of the gene entirely. Scientists can then look at what happens to the organism when the gene is no longer functional and learn about its role in the cell.



Cas9 and the gRNA bind to the target DNA based on matching sequences.



Cas9 cuts both strands of DNA.



The cell repairs the DNA, but the DNA repair mechanisms are error prone, introducing mutations that can knock out the gene.

minipcr

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# Genes in Space™

Genes in Space™ is a free science contest that invites middle and high school students to propose DNA experiments that address space exploration challenges. Winners have their experiments launched to the International Space Station where they are carried out by astronauts using miniPCR technology.

Genes in Space™ was founded in 2015 by miniPCR bio in partnership with Boeing. Since then, thousands of middle and high school students have designed real-world experiments in space biology.

LEARN MORE AT

[www.genesinspace.org](http://www.genesinspace.org)

Genes in Space™  
is supported by:

miniPCR bio

ISS NATIONAL LABORATORY

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BioLabs Inc.

BOEING



*In 2023, high school student Pristine Onuoha launched her experiment to the International Space Station to study the mechanisms of telomere lengthening, a paradoxical chromosomal change observed in space travelers.*





# Virtual PD

Join our workshops and learn biotech from home!



## LEARN MORE

About our hands-on professional development opportunities!  
Email [outreach@minipcr.com](mailto:outreach@minipcr.com) to learn about upcoming sessions.

# Lab in a Box

Biotechnology loans for classrooms



Free\*, 2-week loans include:

- Class set of PCR and electrophoresis equipment and accessories
- Space-biology themed reagents and curriculum
- Teacher training and support

## VISIT

[genesinspace.org/lib](http://genesinspace.org/lib) to request a loan

\* After voluntary \$100 shipping fee

# Taking molecular biology to new places



## Decoding python morphs

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Charlie Williams is a ball python breeder and at-home scientist. He has a newfound and growing passion for genetics and DNA testing. With the help of miniPCR equipment and support, Charlie routinely extracts DNA from Ball Python sheds and tests them for gene variants that influence color patterns, known as morphs. Work like Charlie's has provided the Ball Python community reliability in their breeding projects.



## Bringing DNA Day to Ghana

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Through their passion for scientific outreach Drs. Nancy Sey, Tessa Montague and Fred Rubino brought their expertise and miniPCR equipment to Opoku Ware and Yaa Asantewaa senior high schools in Kumasi, Ghana. Students got the opportunity to practice pipetting and embrace their inner detective through the Wrongfully Convicted Forensics lab.

*"We take pride  
in enabling  
science out of  
the lab in ways  
that were never  
before possible."  
- Zeke Alvarez  
Saavedra, PhD,  
miniPCR bio  
co-founder*





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