

Solutions for Teaching PCR



TEACH PCR — THE CORE TECHNIQUE OF MODERN MOLECULAR BIOLOGY

Polymerase chain reaction (PCR) is a fundamental technique used to create copies of specific bits of DNA. Teaching your students how to perform PCR equips them with skills crucial to fields ranging from genetic engineering, diagnostics, and personalized medicine to evolutionary and conservation biology. By partnering with Bio-Rad, you can ensure your students learn these skills using the same equipment and reagents used in research labs around the world.

Bio-Rad Can Help

An industry leader in the development of cutting-edge products for biological research and diagnostics, Bio-Rad expresses its commitment to science education through its Explorer program, which offers Bio-Rad products at a discount for use in classroom laboratories. This ensures students learn modern biotechnology techniques like PCR using the same equipment they might someday use in research and diagnostics labs. The Explorer program also partners with teachers and industry experts to develop educational kits and training resources to help you achieve your teaching goals.



Educational Kits for PCR

Teach PCR with these hands-on lab activities that engage students with real-world contexts. Students amplify and analyze DNA from forensic (simulated), human, agricultural, and environmental samples to explore the utility of PCR in crime scene investigation, medicine, food analysis, and ecology, among other applications.



Crime Scene Investigator PCR Basics Kit

Students use premade DNA samples to simulate DNA profiling using short tandem repeat (STR) analysis, as commonly used in forensic laboratories.



GMO Investigator Kit

Students extract DNA from food samples and then apply PCR and DNA electrophoresis to test for the presence of two GMO-associated DNA sequences.



PV92 PCR Informatics Kit

Students extract DNA from their cheek cells or hair follicles and then use PCR and electrophoresis to fingerprint their own DNA. Explore the phenomenon of Alu repeats and give students a personal connection to the Hardy-Weinberg equilibrium.



DNA Barcoding Kits

Students incorporate DNA extraction, PCR, DNA sequencing, and bioinformatics as they genetically identify species of fish, mammals, insects, or fungi using a DNA barcode. Investigate local biodiversity or check to see whether food fraud is occurring.

Research-Quality Equipment for PCR

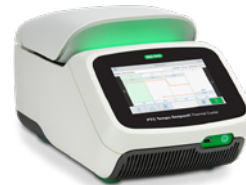
T100 Thermal Cycler

A PCR workhorse in academic and industrial research labs, the user-friendly T100 Thermal Cycler offers the reliability, durability, and industry-leading performance that you expect from Bio-Rad. Capable of running up to 96 samples all at once, the T100 Thermal Cycler is easy to program and accommodates standard PCR tubes, tube strips, and plates.



PTC Tempo Thermal Cycler

For educators looking for more advanced features and flexibility, the PTC Tempo Thermal Cycler is available in various configurations to meet different throughput needs. It offers LED run status lights, a programmable thermal gradient, and advanced connectivity options with WiFi, network drive access, and BR.io cloud platform accessibility.



	T100 Thermal Cycler	PTC Tempo Thermal Cycler
Feature	Robust and economical for routine PCR	For demanding applications and multiple users, offers premium performance on a modern platform
Format(s)	96-well	<ul style="list-style-type: none"> ■ 96-well ■ 48/48-well ■ 384-well ■ Deepwell
User interface	5.7" graphical touch screen	8" graphical touch screen
Performance	<ul style="list-style-type: none"> ■ Accuracy: $\pm 0.5^{\circ}\text{C}$ ■ Uniformity: $\pm 0.5^{\circ}\text{C}$ well-to-well within 30 sec ■ Max ramp rate: $4^{\circ}\text{C}/\text{sec}$ ■ Temperature range: $4\text{--}100^{\circ}\text{C}$ 	<ul style="list-style-type: none"> ■ Accuracy: $\pm 0.2^{\circ}\text{C}$ ■ Uniformity: $\pm 0.4^{\circ}\text{C}$ well-to-well within 10 sec ■ Max ramp rate: up to $5^{\circ}\text{C}/\text{sec}$ ■ Temperature range: $4\text{--}100^{\circ}\text{C}$
Size (W x D x H)	26 x 47 x 23 cm (10 x 18 x 9")	28 x 50 x 26 cm (11 x 20 x 10")
Connectivity	—	WiFi, BR.io, USB A 2.0, Ethernet, barcode scanner
Memory capacity	<500 protocols; unlimited with a USB drive	<100,000 protocols; unlimited with a USB drive



Cloning and Sequencing Explorer Series

Teach a complete gene cloning workflow with this 6- to 8-week series of laboratory activities that encompass nucleic acid extraction, PCR, cloning into a plasmid, DNA sequencing, and informatics.



Options for Teaching PCR Applications without a Thermal Cycler

Virus Detection and Transmission Kit

Use preamplified DNA samples (no thermal cycler needed) and gel electrophoresis to deduce the mode of transmission and chain of infection of a virus throughout a restaurant.

Science of Opioid Dependence Kit

Have your students explore the environmental and genetic links to opioid dependence as they design a human genetic research study using preamplified and predigested DNA samples.

Have Questions? Need a Quote?

Visit explorer.bio-rad.com to learn more about products and resources for educators.

Contact us at info.bio-rad.com/ExplorerContactUs with any other questions or to request a quote.

Ordering Information (Educator Discount)

The ordering information listed here is for purchases for **educational use only**.

Visit bio-rad.com/PCR for information on ordering for research use.

Catalog #	Description	Catalog #	Description
Thermal Cyclers		Reagents and Consumables for PCR	
1861096EDU	T100 Thermal Cycler , includes 96-well thermal cycler, power cord, tube support ring	1665009EDU	Master Mix for PCR , 1.2 ml
12015382EDU	PTC Tempo 96 Thermal Cycler , network-connected thermal cycler for PCR, includes PTC Tempo 96-well instrument, cables	1708874EDU	dNTP Mix , 0.2 ml
12015392EDU	PTC Tempo Deepwell Thermal Cycler , network-connected thermal cycler for PCR, includes PTC Tempo Deepwell instrument, cables	1708872EDU	MgCl₂ Solution , 1.25 ml
12015394EDU	PTC Tempo 384 Thermal Cycler , network-connected thermal cycler for PCR, includes PTC Tempo 384-well instrument, cables	1708870EDU	iTaq DNA Polymerase , 250 U
12015309EDU	PTC Tempo 48/48 Thermal Cycler , network-connected thermal cycler for PCR, includes PTC Tempo 48/48-well instrument, cables	TBS0201EDU	0.2 ml 8-Tube Strips without Caps
12018650EDU	PTC Tempo Thermal Cycler WiFi Adapter , U.S. only, WiFi antenna enables WiFi connection for PTC Tempo Thermal Cycler in the United States	TLS0801EDU	Low-Profile 0.2 ml 8-Tube Strips without Caps , natural
12018509EDU	PTC Tempo Thermal Cycler WiFi Adapter , global, WiFi antenna enables WiFi connection for PTC Tempo Thermal Cycler	TLS0851EDU	Low-Profile 0.2 ml 8-Tube Strips without Caps , white
Educational Kits for PCR		TCS0803EDU	Optical Flat 8-Cap Strips
1662600EDU	Crime Scene Investigator PCR Basics Kit , contains sufficient materials for 8 student workstations (2–4 students per workstation)	TFI0201EDU	0.2 ml PCR Tubes with Flat Caps
1662100EDU	PV92 PCR Informatics Kit , contains sufficient materials for 8 student workstations (2–4 students per workstation)	TWI0201EDU	0.2 ml PCR Tubes with Domed Caps
1662500EDU	GMO Investigator Kit , contains sufficient materials for 8 student workstations (2–4 students per workstation)		
17007432EDU	Fish DNA Barcoding Kit , contains sufficient materials for 8 student workstations (2 samples and 2–4 students per workstation)		
17007366EDU	Mammals, Insects, and Fungi DNA Barcoding Kit , contains sufficient materials for 8 student workstations (2 samples and 2–4 students per workstation)		
17007154EDU	Fish, Mammals, Insects, and Fungi DNA Barcoding Kit , contains sufficient materials for 8 student workstations (2 samples and 2–4 students per workstation)		
17008261EDU	Virus Detection and Transmission Kit , contains sufficient materials for 8 student workstations (2–4 students per workstation)		
17005316EDU	Science of Opioid Dependence Kit , contains sufficient materials for 8 student workstations (2–4 students per workstation)		
1665000EDU	Cloning and Sequencing Explorer Series , includes 8 modules with lab activities from DNA extraction and cloning to computer-based sequence analysis, curriculum		

BIO-RAD is a trademark of Bio-Rad Laboratories, Inc. All trademarks used herein are the property of their respective owner. © 2023 Bio-Rad Laboratories, Inc.

BIO-RAD

**Bio-Rad
Laboratories, Inc.**

Life Science
Group

Website bio-rad.com **USA** 1 800 424 6723 **Australia** 61 2 9914 2800 **Austria** 00 800 00 24 67 23 **Belgium** 00 800 00 24 67 23 **Brazil** 4003 0399
Canada 1 905 364 3435 **China** 86 21 6169 8500 **Czech Republic** 00 800 00 24 67 23 **Denmark** 00 800 00 24 67 23 **Finland** 00 800 00 24 67 23
France 00 800 00 24 67 23 **Germany** 00 800 00 24 67 23 **Hong Kong** 852 2789 3300 **Hungary** 00 800 00 24 67 23 **India** 91 124 4029300 **Israel** 0 3 9636050
Italy 00 800 00 24 67 23 **Japan** 81 3 6361 7000 **Korea** 82 080 007 7373 **Luxembourg** 00 800 00 24 67 23 **Mexico** 52 555 488 7670
The Netherlands 00 800 00 24 67 23 **New Zealand** 64 9 415 2280 **Norway** 00 800 00 24 67 23 **Poland** 00 800 00 24 67 23 **Portugal** 00 800 00 24 67 23
Russian Federation 00 800 00 24 67 23 **Singapore** 65 6415 3188 **South Africa** 00 800 00 24 67 23 **Spain** 00 800 00 24 67 23 **Sweden** 00 800 00 24 67 23
Switzerland 00 800 00 24 67 23 **Taiwan** 886 2 2578 7189 **Thailand** 66 2 651 8311 **United Arab Emirates** 36 1 459 6150 **United Kingdom** 00 800 00 24 67 23

