

Forensic DNA Fingerprinting Kit — AP Big Idea 3: Who Done It?

Using DNA as evidence, students figure out for themselves, “Who done it?”

DNA evidence assists in criminal, missing person, mass disaster, and paternity cases. It can be used to identify a perpetrator or exonerate the innocent. Using real DNA as evidence, your students play the role of crime scene investigator.

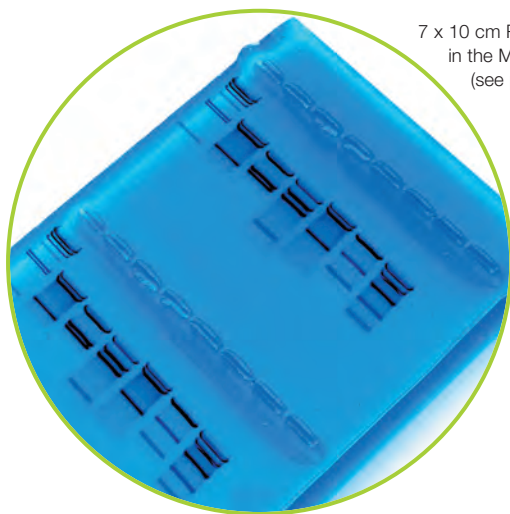
Restriction enzymes are essential tools for molecular cloning and the mapping of genes and genomes. They are also used in genetic engineering to create recombinant DNA molecules for transforming bacterial, plant, or animal cells. Restriction enzymes recognize specific double-stranded DNA sequences and they cut the DNA by making two incisions, one through each of the phosphate backbones of the double helix. The chemical bonds that the enzymes cleave are easily reformed by DNA ligases, so that restriction fragments carved from the DNA of different organisms can be spliced together, creating new hybrid organisms.

In this lab, students observe the effects of two DNA restriction enzymes on a series of plasmid DNA samples. The six DNA samples in this kit are plasmids engineered to mimic the natural variations in DNA that exist between one human being and another. One DNA sample has been collected from a “crime scene” and five samples have been obtained from various “suspects.” Each sample is digested using a mixture of two DNA restriction enzymes, generating a distinct set of DNA fragments for each sample. The resulting DNA fragments are separated by agarose gel electrophoresis and visualized using Bio-Rad’s revolutionary Fast Blast™ DNA stain.

This activity provides in-depth explanations about how restriction enzymes cut DNA and how electrophoresis is used to separate and visualize DNA fragments. The unique curriculum provided in this kit guides students through the procedure of constructing a standard curve using their own gel data. They can then use their standard curve to estimate the molecular weights of the unknown DNA fragments generated by different restriction enzymes.

Electrophoretic techniques that distinguish DNA fragments by size are essential in forensics and in the mapping of restriction sites within genes. With the curriculum in this kit, students also have the opportunity to read plasmid maps and predict the sizes of DNA fragments from restriction enzyme digests prior to performing the lab. They can go one step further and use restriction digest maps of lambda bacteriophage genomes (provided in the kit curriculum) to design novel plasmids. In the process of doing these extension activities, students learn how restriction enzymes function and how they are used in genetic engineering.

Use this kit to open the door to rich discussions about the scientific, ethical, and legal implications of forensics, DNA profiling, and genetic engineering.



7 x 10 cm ReadyAgarose™ gel runs in the Mini-Sub® cell GT cell (see p. 104)

Forensic DNA Fingerprinting Kit



Each kit supports 32 students.

Forensic DNA Fingerprinting Kit

Catalog # List Price EDU Price
1660007EDU \$167.50 **\$134.00**

We’ve gone green! The curriculum manual is no longer included in this kit. It is available to download free of charge online.

Convenient lyophilized reagents. Ships at room temperature. Store reagents bag at -20°C.

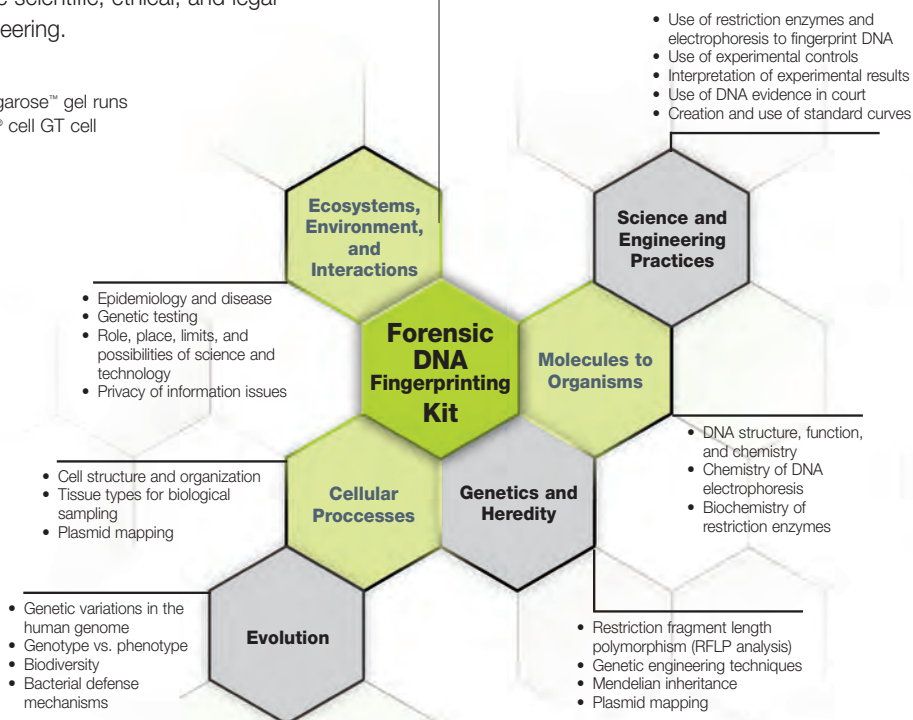
Forensic DNA Fingerprinting Kit with printed curriculum manual

1660037EDU 173.75 **139.00**

Key Kit Features

- Aligns with AP Biology Big Idea 3; Lab 9
- Study DNA and restriction enzyme functions
- Use electrophoresis to visualize DNA fragments
- Construct standard curves from student data
- Make precise determinations of DNA fragment sizes
- Complete in two 45 minute lab sessions

Educational discounts apply only to items ordered with an EDU suffix. EDU price discounts are for qualified educational institutions and educators only.



To learn more, visit <https://www.bio-rad.com/en-sg/product/forensic-dna-fingerprinting-kit?ID=18721652-4f03-4c64-90f8-ab309e058dbb>