

HUMAN GENETICS

and Society

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2e



Figure 9.9 This handheld PCR machine will allow samples to be processed and analyzed at the crime scene.



CASE A: QUESTIONS

Now that you understand how and why a DNA profile is constructed, let's look at some of the issues raised in Margaret Sackler's case.

1. If you were the judge, would you give William Bern a new trial? Why or why not?
2. If you were the prosecutor, what arguments would you give for not using the new DNA evidence?
3. If you were William's attorney, what arguments would you give to convince the judge that the DNA evidence should be submitted and a new trial granted?
4. Margaret is an eyewitness. Which is more reliable, an eyewitness or DNA testing? Why?
5. Should people who have already been convicted use DNA testing to get new trials? Why or why not?
6. In some cases, the DNA match is not perfect but is a 60% match. What could that mean?

9.3 When Did DNA Forensics Enter the U.S. Courts?

As discussed in Chapter 1, scientific evidence is not automatically admitted into a court of law. In the landmark case *Frye v. U.S.* (Spotlight on Law: Chapter 1), four questions were

posed that for more than 90 years would decide whether science was “good science” and not “junk science.” The *Frye* test was applied to DNA forensics; it passed this test and has been accepted in all state and federal courts.

The first criminal case to use DNA forensics began in England in 1983 (see “Spotlight on Law: Narborough Village Murders”). It took several years before this type of evidence was used in the United States. The use of DNA evidence in the U.S. legal system was scrutinized as thoroughly as any other scientific method. Each state had to set its own standards for the use of DNA profiles using the *Frye* test, and the public was generally not aware of the use of DNA forensics for several years.

The first U.S. case to challenge the admissibility of a DNA profile was *People v. Castro*, 545 N.Y.S.2d 985 (S.Ct. 1989). Castro murdered a 20-year-old woman and her 2-year-old daughter. Blood was found on Castro's watchband.

In response to the challenge, the court decided that DNA identification procedures were generally accepted among the scientific community. This landmark case was just the beginning of DNA evidence in the U.S. courts. Since then it has been admitted in all types of cases including murder, divorce, paternity, and child support.

DNA profiling has had a significant impact on rape cases. Previously, rape cases were difficult to prosecute. It usually came down to one person's word against another's. When evidence could be obtained (semen or blood) and matched to a suspect, it gave the court solid evidence to use. Today victims are much more likely to report rapes, and more convictions are obtained.

How are DNA profiles used in the courtroom? The use of scientific knowledge in civil and criminal law is called forensics. Forensic DNA analysis is usually performed in state and local police crime labs, private labs, and the Federal Bureau of Investigation (FBI) lab in Washington, D.C.

In criminal cases, DNA is often extracted from biological material left at a crime scene, which can include blood, tissue, hair, skin fragments, and semen. DNA profiles are prepared from evidence and compared with those of the victim and any suspects in the case.

Most forensic testing in the United States uses a panel of 13 different STRs (review preceding section) for preparing DNA profiles. The number 13 is not random. When the first DNA database was established in Virginia, it became the template for all others. The largest database is kept by the FBI and is called **Combined DNA Index System (CODIS) panel**. It is used by law enforcement and other government agencies to compare DNA profiles of convicted criminals at both the

Combined DNA Index System (CODIS) panel a national database of DNA profiles begun by the FBI