

Forensic DNA analysis permits law enforcement to match DNA evidence left at a crime scene to the perpetrator of the crime. This technique has facilitated both apprehension of criminals and exoneration of those wrongly arrested or incarcerated. As the use of forensic DNA analysis expands, however, so too do legal and ethical concerns. In particular, concerns have been raised about the infringement on individual privacy, the effect on vulnerable populations, and the quality and capacity of crime laboratories.

### *DNA databases*

The Federal Bureau of Investigation (FBI) began incorporating DNA testing into criminal investigations in 1988. State crime laboratories soon followed, and the FBI recognized the potential value of linking these laboratories to the federal system and to each other. The FBI developed the Combined DNA Index System (CODIS), a fully integrated law enforcement system of DNA records from national, state, and local crime laboratories. CODIS was formally authorized by Congress in 1994, and Congress directed the FBI to set national standards for forensic DNA testing. The FBI selected as the standard for DNA profiling 13 short DNA segments or “short tandem repeats” (STRs), which are regions of the genome that do not code for any traits but that, viewed in combination, provide a pattern unique to each individual. In 1998, the national CODIS system was launched.

CODIS currently contains more than four million DNA profiles from convicted offenders and more than 160,000 DNA profiles obtained from crime scene evidence. All 50 states participate in CODIS, although the laws authorizing DNA collection, analysis, and entry into databases vary considerably. Every state takes DNA samples from convicted sex offenders, more than 40 states allow collection of samples from all convicted felons, at least 38 allow from convicts of certain qualifying misdemeanors, eleven allow from those arrested for certain crimes, and one state permits collection from individuals detained as suspects. The passage of the DNA Fingerprinting Act of 2005 allowed CODIS to include samples from any individual from whom collection was authorized under state law, and also permitted inclusion of DNA from federal arrestees and from non-U.S. detainees. These changes in the law have led to a dramatic expansion of forensic DNA databases.

Proponents of database expansions say larger DNA databases help solve crimes faster, thereby stopping criminals before they can strike again. Virginia, which takes DNA from all those arrested for violent felonies, claims to have solved hundreds of crimes based on profiles in its arrestee database. Several other states, including Louisiana, collect DNA from people arrested for misdemeanors as well. But expanding DNA databases to include arrestees unfairly assumes guilt, critics say. Those put in the Virginia arrestee database are automatically purged if charges are dropped, but in other states --

including California, Louisiana, and New Mexico -- arrestees must request the removal of their DNA profiles.

### *Privacy concerns*

Two types of privacy interests arise in the context of the collection and use of DNA for criminal justice. First, privacy concerns are raised by the governmental intrusion, both physical and psychological, that takes place when DNA is collected and used to create a DNA profile that is stored in a database and searched repeatedly without the individual's knowledge or consent. Second, privacy concerns are raised by the government's retention of the biological sample from which the profile is derived, since it is a potent source of private information about both the suspect and the suspect's family members.

The Fourth Amendment to the U.S. Constitution serves as the lens through which the legal system examines the legitimacy of government intrusions into the personal lives of its citizens. It ensures "the right of people to be secure in their persons . . . against unreasonable searches and seizures." To be reasonable, a search must generally be supported by a warrant based on "probable cause" – reasonable belief that a crime has been committed by the individual whose person or property is searched or seized. Collection of DNA by law enforcement pits the "right to be left alone" against public safety needs.

The Supreme Court has held that forcible, physical intrusion into the body constitutes a search under the Fourth Amendment. Accordingly, lower courts have generally agreed that collection of DNA samples from qualifying offenders through blood samples or oral swabs amounts to a Fourth Amendment search. Nevertheless, they have consistently rejected Fourth Amendment challenges to these searches for law enforcement use on one of two grounds. First, they have determined that offenders have a "diminished expectation of privacy" by virtue of their status as offenders. Second, they have concluded that the "special needs" of law enforcement for efficient investigation of future crimes outweighs an individual's privacy interest in being excluded from the database.

Even when the government's actions do not constitute a search within the meaning of the Fourth Amendment, privacy concerns nevertheless arise. This is the case with so-called "DNA dragnets," in which police seek to collect samples from many individuals meeting a general description — such as all black males living in a particular geographic area— none of whom individually is a suspect, but one of whom may have committed the crime. DNA dragnets are ostensibly voluntary, but those from whom samples are requested may fear stigmatization or increased scrutiny if they refuse to participate.

Privacy concerns are also implicated when police collect DNA that is no longer on someone's person, sometimes termed "abandoned DNA." Police have extracted suspects' DNA using articles such as cigarette butts or envelopes. Lower courts have held that there is no "reasonable expectation of privacy" in DNA thus discarded, just as

there is no reasonable expectation of privacy in the trash one throws in the garbage can. Some question, however, whether the analogy to discarded trash is appropriate, given that discarding of DNA is involuntary and that it contains highly personal information.

Finally, privacy concerns arise in the context of so-called “familial searches.” The genetic similarity of close relatives allows the use of DNA of one family member to suggest whether another family member has committed a crime. Police thus may follow a close relative in the hopes of collecting a discarded tissue or coffee cup and use the DNA on that object to compare to a DNA profile obtained at the crime scene. Police may also conduct so-called “low stringency searches” of CODIS in an attempt to obtain a partial match to crime scene evidence. They then may approach the person partially matched in the hopes that he or she is related to the suspect. Some feel that this approach provides important leads for investigating crimes, while others feel it unfairly focuses police attention towards people because of their familial relationships, and may also result in police revealing a genetic link between individuals who were previously unaware of their relationship.

### *Retention of DNA samples*

Another privacy concern arises from the government’s retention of the biological sample from which the DNA profile was derived. While the DNA profile may not code for particular traits, the genetic sample contains intensely personal information about genetic disorders, familial relationships, and, in the future, perhaps predilection to certain behavioral traits such as a propensity to antisocial behavior. CODIS prohibits inclusion of the sample in a national databank, but most state laws are silent or unclear on the issue, and several explicitly require that specimens be maintained. Only one state, Wisconsin, requires the destruction of offender specimens after profiling.

Proponents of retention note that it may be desirable to retest the specimens at a future time, if, for example, better technological tests come along. A more pressing reason to maintain the specimens is for quality control purposes. In the event of a possible mislabeling or other error, the ability to retest the specimen would be valuable. Opponents of retention, however, argue that profound privacy interests are at stake. As long as the samples are stored, there exists a possibility that the state (or an unauthorized third party) may access and then misuse this kind of information – whether by disclosing it for retributive reasons, by detaining those predisposed to antisocial behavior to serve crime control purposes, or simply accidentally releasing the information.

Fueling the fear that genetic information may be misused is the fact that many states authorize access to their DNA forensic databases for non-law-enforcement purposes. In addition to allowing their use for the identification of human remains or missing persons, a handful of states also allow the use of DNA samples for unspecified “humanitarian purposes,” and others explicitly provide access for academic or medical research. While some of these states stipulate that all identifying information must be removed, others

have no such requirement. Conceivably, these laws could allow the release of identifying genetic material to private researchers.

### *Effects on vulnerable populations*

Some worry that the use and expansion of law enforcement DNA databases may deepen the racial inequalities in the criminal justice system and exacerbate minorities' distrust of law enforcement. They argue that since only those who come into contact with law enforcement are entered into databases, disparate arrest and conviction practices will result in a disproportionate number of minorities being included in the databases. Consequently, since only those profiles included in databases can be matched to DNA evidence from a crime scene, minorities will be more likely to be identified than whites. The use of low-stringency familial searches will further the disproportionate effect that databasing will have on minorities, given that they are more likely to have relatives with profiles in the databases.

The use of DNA analysis to determine the probable race or ethnicity of a suspect from a DNA sample has also raised concerns. Recently a number of companies have begun to market genetic testing for ancestral background and physical appearance to law enforcement. One company claims its test is a "molecular eye-witness." Such technology, if properly validated, could provide a valuable tool to law enforcement by putting a "face" on a DNA profile and thereby narrowing the field of potential suspects. However, some question whether this technology has been sufficiently validated.

### *Laboratory quality*

Another concern raised by DNA forensics is the quality of the testing. While DNA evidence is considered by courts to be reliable in general, questions remain about the accuracy and reliability of testing performed by some laboratories that perform forensic DNA analysis. Errors in laboratory testing can lead to injustice when the wrong person is identified as the perpetrator or when the evidence is excluded and the actual perpetrator goes free. Numerous recent scandals in crime laboratories around the country have revealed errors caused by both negligent practices and deliberate malfeasance, suggesting the need for a systematic assessment of the quality of forensic laboratories and the extent to which existing quality standards are adequately enforced.

### *Conclusion*

DNA forensic technology may be law enforcement's most remarkable crime-fighting tool in history. However, the collection and use of DNA for forensic purposes implicates deeply-held societal values. Society must be careful not to let the use of forensic DNA technology outpace consideration of the legal and ethical concerns that accompany it.

*Compiled by Dustin Hays  
Last updated 8/2008 by Sara Katsanis*