

SCIENCE

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EDITORIAL

DNA Fingerprinting and Eyewitness Testimony

Case I: A young couple was found murdered in a campground, with no apparent clues except that the woman had been raped. From the DNA evidence, a paroled felon was identified. It was shown later that he was in a nearby town the night before the crime, had no alibi for the time of the crime, and was traced to a Florida city where he was apprehended. Case II: A 10-year-old girl was molested by a man she identified as a "large black man." A local handyman fitting that description was said by an eyewitness to have been in the vicinity near the time of the crime. The individual so identified was found to have a previous record of child molestation, but on checking his DNA he was found to be clearly innocent and was never even brought to trial.

The power of DNA fingerprinting is well illustrated by these two cases, which tell of the conviction of a guilty man who otherwise was unlikely to have been connected with the crime and the lack of charges against an innocent person who would, in the opinion of experts, have probably been convicted on the basis of the eyewitness testimony.

A new National Academy of Sciences report provides strong support for the use of DNA fingerprinting in legal proceedings. The report argues that rigorous controls should be incorporated into the procedure—with accreditation and advice provided at the federal level; the report did not suggest the need for a moratorium until perfection is achieved. The scientific and judicial communities should support the recommendations expressed in the report that blood samples be studied and archived in order to further strengthen the statistical interpretation of the data. Continuing to use DNA evidence while fine-tuning the methodology even further seems the appropriate path. Unfortunately, the *New York Times* broke the embargo on the Academy report in a front-page story on Tuesday (14 April) and got the bottom-line message wrong. Ironically, the paper published an editorial on Saturday (18 April) stating that, thanks to computers, the old-fashioned thumbprint fingerprinting has been a gigantic boon to law enforcement and was even better than its early boosters had predicted. When the original fingerprint idea was introduced into courtrooms (it had been used previously by officials in our colonial days to prevent forgery), many worried whether fingerprints were indeed unique and if the police could be trusted to use them.

DNA fingerprinting, like all new tools of forensics, must be proven step by step. The emotional appeal that the associated probabilities must be perfect to be admitted as evidence ignores the frailties of the usual courtroom evidence. Eyewitness testimony is often absent in murder cases and is frequently unreliable in rape cases. This is especially alarming since cases of rape and attempted rape increased by 59% in the United States last year compared to the previous year. In fact, DNA fingerprinting as it is used today, and certainly as it will be improved in the future, has a stronger scientific basis than many other types of evidence. Less reliable types of evidence have been used for many years in court cases; justice can only be served better by a technique with higher standards.

Contrary to those who see DNA fingerprinting as a tool solely for the prosecutor, its value may be even more powerful for the defense. A figure of 33% (which is quoted by many forensic scientists but was unverifiable as of this writing) is given for the number of "suspects" (individuals for whom there is enough other evidence to go to trial) who are exonerated and not brought to trial because of DNA evidence. Scientists should not be concerned with whether DNA fingerprinting evidence is more useful for the prosecution or the defense. Rather, they should be concerned with the accuracy of the results and the reliability of the method as performed by commercial laboratories. For the moment, scientists can say that (i) a new powerful tool to establish the truth has been provided, (ii) it is so powerful that it is important to maintain and improve its reliability, and (iii) any tool that aids in the establishment of truth is to the benefit of society. The Academy report, which if anything errs on the side of caution, still clearly states that we must proceed and that DNA fingerprinting should have a positive influence for more objective courtroom testimony. There should be room for controversy and doubts to be expressed in any new step, but exaggerated concerns over minor imperfections should not be allowed to halt the application of a new tool of science to a better and more just future.

Daniel E. Koshland, Jr.