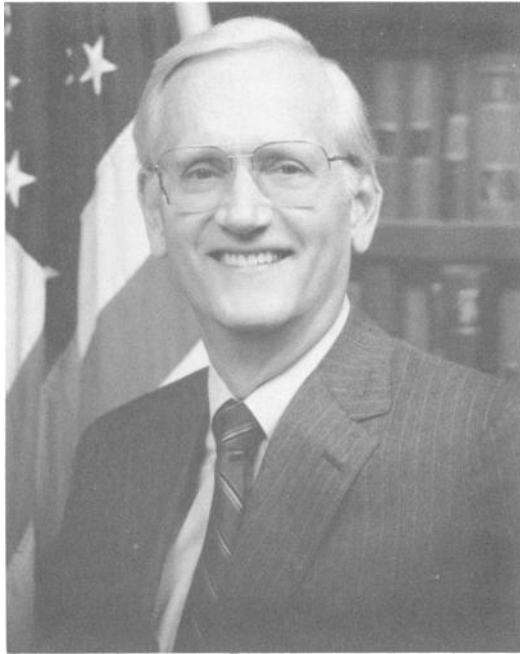


GUEST EDITORIAL



William S. Sessions, Director

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In many ways, the past several years have been banner years for the FBI. We have had major successes in our priority areas—organized crime, terrorism, foreign counterintelligence, white-collar crime, and our newest priority area, drugs.

But, the 21st century is around the corner: law enforcement must prepare itself now for the challenges of tomorrow. We must use our skills and the tools available to us right now to out-run, out-gun, and out-think the criminals. And I think science and technology can provide those tools.

But before I discuss the present and the future, let me step back in time for a moment to tell you something about the FBI's past. By the 1930s, the antiquated Bertillon system of

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identification by measuring body dimensions had been buried for decades. In 1933, the FBI Identification Division in Washington, DC, established its Latent Fingerprint Section for making technical examinations of latent and inked prints.

Today, 56 years later we are on the threshold of another revolution that will dramatically change the way we battle violent crime: the forensic science analysis of deoxyribonucleic acid (DNA).

As a judge for 13 years, I observed firsthand the value of scientific evidence in the courtroom. When I became Director of the Federal Bureau of Investigation in November 1987, I pledged that our full service national forensic science laboratory would stay on the leading edge of crime investigation technology.

Along with computerized facial aging, the use of lasers for visualizing fingerprints, and other forensic science techniques, DNA profiling has now become a formidable weapon in our arsenal against violent crime. In the near future, crime laboratories across America should be able to analyze hair, blood, or other body fluids left at the scene of a crime and make an identification

Cancer researcher Lewis Thomas said: "An active field of science is like an immense intellectual anthill; the individual almost vanishes into the mass of minds tumbling over each other, carrying information from place to place, passing it around at the speed of light."

Professor Thomas' message illustrates my message. Only by working together can scientists, law enforcement policy makers, prosecutors, and ultimately the American people fully realize the tremendous potential that forensic science analysis of DNA offers.

The FBI's initiatives in DNA profiling are all directed toward one goal: solving crime in America. Properly used, DNA analysis will help us identify violent criminals earlier in the investigation and increase our chances of finding the truth. DNA profiling, like a fingerprint, is becoming a scientifically and legally accepted means of positive identification.

Positive identification by DNA profiling is fact. It is not subjective. It is not influenced by the vagaries of human emotion. It can help convict the guilty. But just as important, it can absolve the innocent. In fact, in January 1989, the Governor of Virginia granted a full pardon to convicted murderer David Vasquez when it was determined through DNA tests and other evidence that another person was responsible for the crime.

In December 1987, the FBI established a DNA Implementation Committee to look at all the issues—such as the probes, procedures, legal basis, and techniques—to ensure the full law enforcement potential of DNA is realized. It is made up of personnel from our laboratory, the National Crime Information Center (NCIC), the Legal Counsel Division, the Training Division, and the Office of Congressional and Public Affairs.

At the FBI Academy in Quantico, Virginia, we have a DNA research lab with a staff of ten who work on nothing but DNA. This lab is part of our Forensic Science Research and Training Center established in 1981 with a mission to support the forensic research and training needs for the nation's criminal justice community.

In addition to the research lab at Quantico, I have also created a separate DNA Analysis Unit within the laboratory at FBI Headquarters so this emerging technology can be applied to forensic science casework submitted to the lab by Federal, state, and local police agencies. Since we opened for business in mid-December 1988, this unit has accepted evidence from 55 violent crime cases. The results will be presented in court in the near future.

Other FBI programs are joining the DNA revolution. VICAP is the Violent Criminal Apprehension Program. It is part of the National Center for the Analysis of Violent Crime. In a nutshell, VICAP links unsolved violent crimes to one another from across the country and coordinates complex, interagency investigations. Someday, DNA data will be included with other VICAP information to help solve serial crimes such as rapes and murders. We are exploring classification systems that will allow DNA characteristics from evidence recovered at each unsolved homicide or rape scene to be stored in the computer. That stored code would then be compared to the genetic code of suspects.

The National Crime Information Center (NCIC) is another FBI-managed program which

may be used to facilitate the exchange of DNA typing information. NCIC is the only computer-to-computer data storage and retrieval system used by the nationwide criminal justice community. DNA patterns can be converted to multiple-digit codes suitable for entry into computer files. The NCIC may be the conduit through which states pass their own DNA information. Investigators using NCIC with a DNA field can more readily identify kidnapped infants, disaster victims, and unidentified persons.

This concept of state-maintained, nationally available information has a precedent: all 50 states plus Federal law enforcement agencies use NCIC to exchange data on their wanted and missing persons and stolen property records. Just the mention of one name can clarify the need for the nationwide exchange of criminal history data, including DNA information: Ted Bundy, recently executed killer whose heinous crimes spanned the nation.

As mentioned earlier, many components of the FBI are involved in DNA technology. The Legal Counsel Division is particularly involved. At a minimum, we must meet the Frye case standard, which requires that, to be admissible in court, any new scientific principle or discovery "must be sufficiently established to have gained general acceptance in the particular field in which it belongs." We can not afford to stumble over legal pebbles by rushing into use of this technology before it is proven. And we are proving through a dedicated research effort that the tests are both valid and reliable. Most important, we must have the support and backing of the full scientific community.

I am happy to report that the courts seem to be looking favorably on DNA typing. So far, courts in ten states have accepted DNA evidence: Maryland, New York, Virginia, Ohio, Florida, North Carolina, Oklahoma, South Carolina, Kansas, and Idaho. And the one appellate court which has ruled on the admissibility of DNA evidence upheld its use. In *Andrews v. State*, a Florida court of appeals upheld the admissibility of DNA identification evidence at the defendant's rape trial.

Yet another legal issue that must be addressed is the issue of Fourth Amendment rights. Americans have the right to be secure in their persons against unreasonable searches and seizures. I know that King County, Washington, and the states of Colorado, California, and Virginia either have or are considering laws that would allow local authorities to obtain body fluids from convicted sex offenders. Samples would then be analyzed for DNA characteristics and the results kept for later comparison.

We must proceed with care in this area, regardless of whether the Federal government builds its own database or leaves that to the states. The drawing of blood for a DNA profile may be seen as far more intrusive than the rolling of fingerprints. The right of society to be free from the fear of crime must be balanced by the Constitutional rights of the individual—even if that individual is an accused criminal.

But even before all the legal questions surrounding DNA profiling are answered, we must also address the logistics of using the data. However we decide to compile our information—whether at the state level, the national level, or both—we want to be able to put that information to judicious use. The probes we use must be standardized so that computer-readable data can be readily exchanged. We have invited a technical working group comprised of forensic science specialists from crime labs across the country to review DNA technology and to develop a consensus on the methods to be used.

In addition, we must hold vigorous and open forums on the use of this technology, welcoming people to our meetings whose sole interest may be protecting civil rights. As I said earlier, we must respect the privacy rights of those tested. Like criminal history information in NCIC, DNA data should be restricted to legitimate law enforcement use only.

So far I have touched on the scientific research and legal facets of DNA profiling. Now let me turn to training. Training is vital because knowledge of this revolutionary forensic science technique must pass to state and local labs. The seminar on DNA technology held in June 1988 at our research center at Quantico was an excellent example of Federal law enforcement cooperation on this issue.

The FBI also has a Visiting Scientist Program. While studying the validity and reliability

issues, visiting scientists are helping to transfer the technology to the crime laboratory community. Since the program began in July 1988, scientists from ten state police laboratories have completed it. Seven more scientists will spend four months at Quantico in the near future. We are working hand-in-hand to validate procedures which will make DNA profiling accepted by courts.

Let me mention another training program. In February 1989, 40 people representing 21 departments in 19 states completed the first 4-week technical training course at Quantico for state and local laboratory personnel. The next course will begin in July 1989. The purpose of the course is to pass on DNA technology to forensic science labs across the country and to standardize the probes everyone will use.

But every revolution has its price. There is no way around the fact that law enforcement will have to spend money to get these labs going. And we all know how tight money is these days. But initial costs—for training personnel and buying special equipment and chemical reagents—will be offset in the long run by savings in investigative man-hours and savings in court time.

I have discussed the FBI's role in cutting a rough trail in the field of DNA forensic science analysis. But permit me to suggest what all of us, the forensic scientists, law enforcement managers, and the prosecutors, can do to help smooth the way. We could all benefit by taking a few steps back to look at the whole picture.

Scientists, of course, are the well from which all this knowledge springs. I would urge you to continue to exchange information by both publishing the results of your research in professional journals and talking informally with your colleagues. Second, get out and visit labs involved with DNA research in academia, in the private sector, and in law enforcement. I invite you to visit our FBI lab in Washington. Third, I applaud your participation in meetings of your member organizations and conferences and seminars and encourage your further participation. This is so often where vital connections are made and ideas are brought up and exchanged.

To law enforcement managers, I would suggest that you focus on DNA issues and applications in meetings of your professional organizations, such as the National Sheriffs' Association and the International Association of Chiefs of Police. Second, I urge you to provide money and personnel to develop and implement DNA profiling. Third, I caution you to understand both the benefits and limitations of this new technology. Forensic science analysis of DNA is an investigative tool not a panacea. Possibly nothing will ever replace classical serological tests and solid investigative skills.

Finally, a word to the prosecutors. Linus Pauling stated that science is the search for truth. As we approach the 1990s and the 21st century, I believe lawyers and prosecutors—as scientists of the law—must understand the technicalities of the different methods used to examine DNA. Each method has benefits and disadvantages.

Second, be sure to keep abreast of the developing case law. Track carefully the introduction of DNA evidence into the courtrooms of the country. We all need to keep abreast of the news: as in any revolution, events move rapidly. Last, remember that the kind of certainty provided by DNA profiling means that it can be a powerful weapon in court for both the prosecution and the defense.

I am excited about DNA's tremendous potential for law enforcement, and I know the forensic science community is also. But we need to proceed calmly, rationally, and judiciously. Remember how Dr. Thomas used the analogy of the seething, interdependent ant-hill in describing science? Perhaps we can keep Professor Thomas' analogy in mind when we recall Aesop's fable of the single, industrious ant. Aesop tells us that the ant, through industry and energy, worked all summer to store up food for the winter. Imagine that energy and foresight multiplied by all the individuals in the colony. My point is that, like the ant of old, we must all prepare today for the challenges of tomorrow.

Cooperation is the key: scientists, law enforcement managers, and prosecutors must lock arms and march ahead with measured strides.