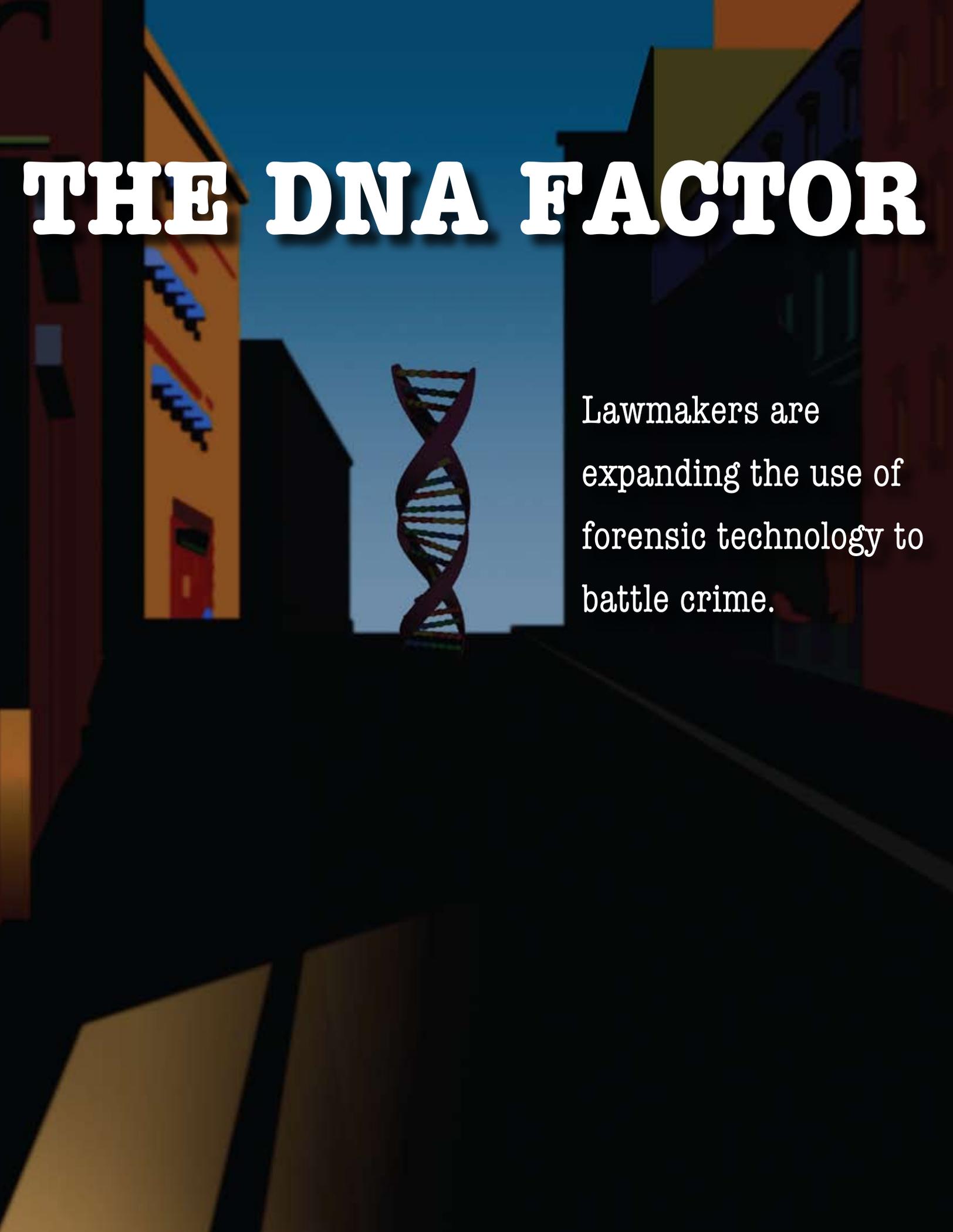


# THE DNA FACTOR

A stylized illustration of a city street at night. The street is dark, and the buildings on either side are silhouetted against a dark blue sky. In the center of the street, a glowing DNA double helix structure stands prominently. The overall style is graphic and modern.

Lawmakers are expanding the use of forensic technology to battle crime.

BY SARAH HAMMOND

Their tragic deaths occurred years apart, but Johnia Berry and Juli Busken have one thing in common. Their murders spurred lawmakers to pass legislation that led to the arrest of their killers, and bolstered a system to catch other criminals.

Berry, 21, lived in Knoxville, Tenn., and was planning to attend graduate school when she was stabbed to death in 2004. Three years later the Johnia Berry Act was enacted. It created a DNA database in Tennessee that led to a DNA match and the arrest of Berry's killer.

"Ironically, he got caught voluntarily giving a DNA sample for an unrelated arrest," says Lieutenant Governor and Senate President Ron Ramsey, the champion of the act.

In Norman, Okla., Busken, a 21-year-old University of Oklahoma dance major and Arkansas native, was abducted, forced into her car, raped and murdered in 1996. Eight years later, a DNA database matched a man who had been charged with rape and second-degree burglary in another case. He was convicted of Busken's rape and murder and sentenced to death.

Last year, Arkansas Senator Dawn Creekmore sponsored the successful Juli's Law, which requires DNA samples to be taken from all suspects charged with murder, kidnapping and sexual assault in the first degree. "We are looking to further expand Juli's law to include burglary," says Creekmore.

Ramsey says there's no question that DNA has become a key tool for criminal investigations. "DNA is the 21st century fingerprint. Without DNA evidence and state databases, bringing these murderers to justice would have not happened."

#### DNA'S GROWING ROLE

Since the advent of DNA testing in 1985, biological material—skin, hair, blood and other bodily fluids—has emerged as the most reliable physical evidence from a crime scene. In 1987, police in Britain convicted a man of rape based on DNA evidence, the first person ever convicted on that basis.

In 1987, Florida rapist Tommie Lee Andrews became the first person in the United States to be convicted as a result of DNA evidence. The following year, a Virginia man called the "South Side Strangler" was convicted after DNA linked him to rapes and murders near Richmond.

Now, more than 20 years after DNA was first used in criminal investigations, its crime-fighting potential continues to be an important focus of state crime control legislation. Expansive policies for DNA collection have proved successful, and states continue to widen

the scope of their statutes. Forty-seven states have laws to collect DNA samples for all convicted felons. With Juli's law, Arkansas joins 20 other states that are expanding DNA collection from those who are arrested for, but not yet convicted of, qualifying offenses. Johnia's law in Tennessee also extends to arrestees.

One reason for the move toward expanding DNA collection is this: Studies show there is a 40 percent chance that burglaries and other nonviolent crimes are being committed by someone who already has commit-

ted a violent crime, perhaps even murder.

The more expansive a state's DNA policy, the more likely it is that a new specimen will match or "hit" a DNA sample that already is in the database. The FBI's Combined DNA Index System is a computer program that allows forensic laboratories at the national, state and local levels to compare samples. It contains more than 5 million profiles, making it the largest in the world.

The information obtained for a new DNA sample is matched against two indexes. The first, the convicted offender index, allows criminal justice officials to match evidence found at the scene of an unsolved crime against specimens taken from qualifying criminals and arrestees.

The second, the forensic index, allows samples from those offenders to be compared to specimens recovered from unsolved crime scenes. It also allows crime scenes to be linked, even if the offender's identity is not yet known. Expanding DNA collection to arrestees will increase the number of testable samples in databases.

DNA analysis is regarded as the "gold standard" of forensic science because research for its techniques have been thoroughly tested and heavily financed. The procedures, however, still are vulnerable to human error. Cases of lab analysts contaminating samples, mislabeling samples and misreporting samples are not uncommon. These mistakes highlight the need for oversight in forensic science so that avoidable errors do not become roadblocks to justice.

#### TESTING FOR INNOCENCE

DNA evidence is not all about putting people behind bars, however. It's also about getting others out from behind them.

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TENNESSEE SENATE PRESIDENT  
RON RAMSEY



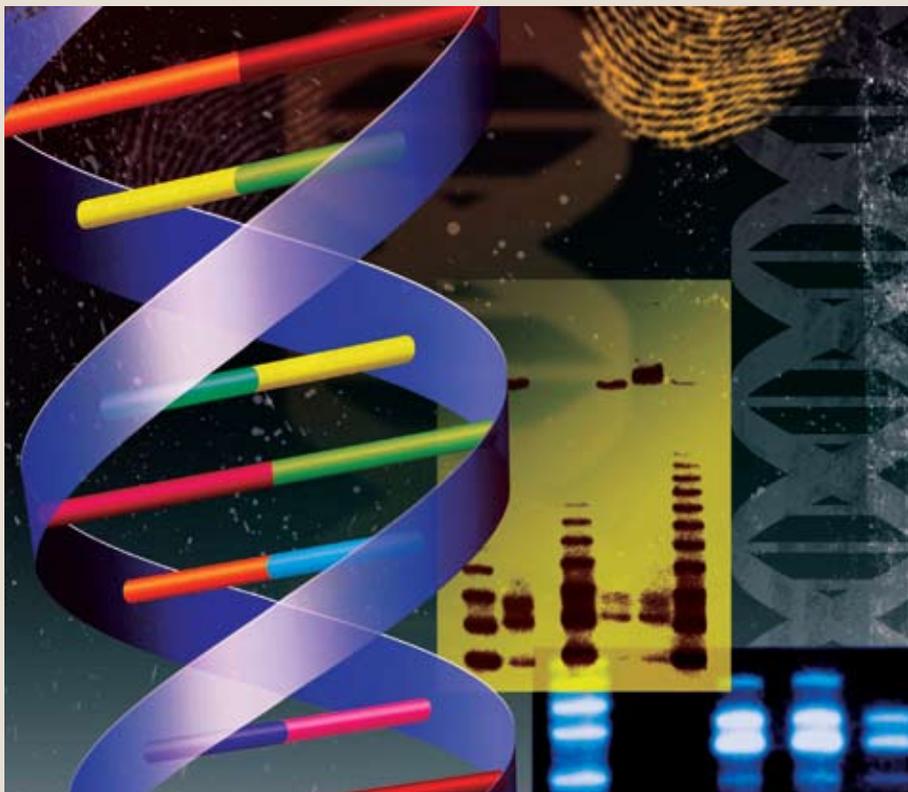
**SENATE PRESIDENT  
RON RAMSEY  
TENNESSEE**



**SENATOR  
DAWN CREEKMORE  
ARKANSAS**

Sarah Hammond tracks criminal justice issues for NCSL

## DNA: ALL IN THE FAMILY



**T**he crime-fighting power of DNA is revolutionizing America's criminal justice systems, but some question whether the science sometimes allows investigators to go too far.

Controversy is rising over what lab technicians should do when a DNA sample reveals a partial match to one of the profiles registered in the database. A partial match means the incriminating biological evidence does not belong to that person, but it may belong to one of their relatives. If a lab turns over the partially matched profile to police to investigate family members, have the constitutional rights of those relatives been violated?

"If my brother's DNA ends up in the database, and he's forfeited his privacy rights by becoming a convicted felon," says Stephen Mercer, a Maryland Defense attor-

ney, "has he also forfeited my privacy rights as a wholly innocent family member?"

Maryland is currently the only state with a statute banning the use of partial matches.

Advocates for the use of partial matches, however, believe safeguards can answer privacy concerns.

"Any time privacy and constitutional matters are at play, there is cause for concern," says Delegate Brent Boggs of West Virginia. "But with proper restrictions and regulations, partial matches of DNA profiles can be an effective tool in the toolbox of law enforcement."

West Virginia is considering legislation that would allow leads from partial matches to be used in trying to solve serious crimes, says, "says Senator Jeffrey Kessler. "If all investigative leads have been exhausted, it's important for public safety not to ignore this

tool in pursuing violent criminals."

Denver District Attorney Mitch Morrissey is one of the nation's leading proponents for using partial matches. "We're running the risk of another victim," he says, "and it would be a huge loss if the technology was available and wasn't used it to stop an offender."

In Colorado, administrative regulations permit the use of partial matches, as well as a procedure known as familial searching, which refines the partial match criteria so that the results are more likely to lead to a family member. This method involves a close examination of the Y chromosome, the male sex chromosome, and works only for men. With this technique, Morrissey says, a genetic link can be established with 90 percent accuracy. In 2009, Denver solved its first case with the aid of familial DNA software, and Morrissey's office has identified potential family matches in 13 other cases. Investigators are still pursuing those leads.

Along with being an effective tool for finding criminals, "DNA is also a powerful investigative tool that is important for determining innocence," Kessler says.

Daryl Hunt was the first person in the United States to be exonerated with the help of a partial match. He was sentenced to life in prison for a brutal rape and murder in North Carolina. After serving 19 years in prison, Hunt is free, and the real murderer was taken into custody because his biological brother's profile was in the North Carolina database.

Still, Mercer warns that just because it's effective, it doesn't make it right.

"If the measure of reasonableness is going to be, 'We got the right guy,' then every search is going to be reasonable. In the name of solving crimes, let's just start going around and kicking down doors," he says. "We're going to solve a lot of crimes. But what's the cost?"

As the capabilities of DNA analysis continue to develop, legislatures will have a role in deciding which scientific procedures are acceptable and under what conditions they can be used in light of privacy concerns.

—Richard Williams, NCSL



**DELEGATE**  
**BRENT BOGGS**  
**WEST VIRGINIA**



**SENATOR**  
**JEFFREY KESSLER**  
**WEST VIRGINIA**



erating the innocent at a rapid pace,” says Creekmore.

At least 39 states have passed laws allowing post-conviction DNA testing. According to the Innocence Project, to date, 251 people in the United States have been exonerated by DNA testing, including 17 who served time on death row.

Federal assistance is also available for post-conviction testing through the 2004 Innocence Project Act. The law includes the Kirk Bloodworth Post-Conviction DNA Testing Program, which provides funding for states to test prisoners who claim they’re innocent. Bloodworth, who spent eight years in prison for rape and murder, was the first person on death row exonerated by DNA testing.

DNA analysis also helps solve cases of missing or unidentified people. The U.S. Justice Department is working with state and local officials to expand their capacity for forensic DNA technology to match missing persons with unidentified human remains.

The FBI’s Missing Persons DNA Database contains samples from relatives of missing people. The system also can accept genetic samples from material known to belong to the victim, such as hair from a comb or a sample taken from the victim’s toothbrush.

#### VICTIM OF SUCCESS

The success forensic science analysis has brought to criminal justice also has brought challenges. Some labs cannot keep pace with the expanded policies, resulting in backlogs of DNA samples.

There are two main components at the heart

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ARKANSAS SENATOR  
DAWN CREEKMORE

of the backlog issue for crime laboratories. The first, the casework sample backlog, are samples collected from crime scenes, suspects and victims in criminal cases. Backlogged casework samples delay analysis for all kinds of forensic evidence. The second major source is the convicted offender backlog, which consists of samples from those arrested and incarcerated for qualifying crimes. The convicted offender backlog includes as many as 300,000 unanalyzed DNA samples, with more than 500,000 samples yet to be taken, according to the National Institute of Justice.

The federal government has made the Forensic DNA Backlog Reduction Program the centerpiece of its effort. It is part of the DNA Initiative that began in 2004 and has aimed to develop new DNA technologies, eliminate backlogs and train forensic professionals at federal, state and local levels. State and local governments can request money to expand crime laboratories that conduct DNA analysis as well as funds to handle, screen and analyze backlogged forensic DNA casework samples.

State legislatures are also addressing the backlog problem. Lawmakers in Arizona, California, Colorado, Illinois, Kansas, Louisiana, Maryland, Michigan, Texas and Wisconsin have authorized audits of state crime labs to improve efficiency and reduce backlog. Other states are studying the issue or hiring private labs to analyze samples to meet growing forensic demands.

#### FISCAL REALITY BITES

As enthusiastic as many lawmakers are about the potential for DNA technology, they also are mindful that new programs cost money. In the current economic climate, legislators are looking for new revenue to cover the costs.

Tennessee is considering charging a fee to local governments for elective DNA testing. Ramsey says. “No one wants to cut funding for crime labs that are doing such good work putting killers behind bars, but at the same time, as legislators, we need to balance the budget and be fiscally realistic during these tough times.”

Advances in forensic science continue to help states increase the effectiveness of their criminal justice systems.

“We need our law enforcement back on the street fighting crime and carrying on their own investigations,” Arkansas’ Creekmore says. “Let DNA take care of part of that workload.”

**CHECK OUT** more on DNA and read NCSL’s recent publication “Building Forensic Technology Capacity” at [www.ncsl.org/magazine](http://www.ncsl.org/magazine).