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WRITTEN TESTIMONY OF DAVID MITTELMAN

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Before the

U.S. House Committee on Natural Resources

Subcommittees on Oversight and Investigations and Indian and Insular Affairs

For the hearing:

“Innovative Technologies and Initiatives to Tackle the Missing and Murdered Indigenous Persons Crisis in Indian Country”

Chairman Gosar, Chairman Hurd, Ranking Members, and Members of the Committee:

Thank you for the opportunity to submit this written testimony regarding the role that advances in forensic science can play in addressing the Missing and Murdered Indigenous Persons (MMIP) crisis.

The disappearance or murder of any individual is a tragedy. When that individual cannot be identified, the consequences extend far beyond the loss of life itself. Families are left without answers. Tribal communities are denied the opportunity to return loved ones home according to their customs and traditions. Law enforcement is often unable to answer the most fundamental question in any investigation: Who was the victim?

For decades, many of these cases remained unresolved not because investigators lacked commitment, nor because evidence was unavailable, but because the scientific tools necessary to identify the unknown simply did not exist. Today, advances in forensic DNA have fundamentally changed what is scientifically possible.

My name is Dr. David Mittelman. I am a molecular biologist by training and have spent nearly thirty years developing genomic technologies for biomedical research and forensic science. I currently serve as Chief Executive Officer of Othram, an accredited forensic laboratory specializing in modern forensic DNA testing. During the past several years, I have had the opportunity to work with federal, state, local, Tribal, and international law enforcement agencies on the identification of unknown human remains and the application of modern DNA technologies to unresolved criminal investigations.

I appreciate the Committee’s interest in this topic because I believe forensic science has reached an important point in its evolution. For more than thirty years, forensic DNA has served primarily as a technology for comparison. It has been used to determine whether biological evidence matched someone who was already known. Today, the capabilities of forensic DNA have fundamentally expanded. Modern forensic DNA technologies no longer depend exclusively on a known suspect, a convicted offender, or an immediate family reference sample. They can now generate investigative leads and identify many individuals who previously could not have been identified.

This evolution has profound implications for the MMIP crisis. Many investigations involving missing and unidentified Indigenous persons begin without the investigative leads or known reference samples upon

which traditional forensic DNA has historically depended. Modern forensic DNA provides investigators with capabilities that simply did not exist when many of these cases were originally opened.

The purpose of my testimony is to explain how forensic DNA has evolved, why those advances are particularly relevant to the MMIP crisis, and why the United States now has an opportunity to substantially reduce the backlog of unidentified human remains rather than simply managing it.

The Identification Gap

Every homicide investigation begins with a victim. Before investigators can determine why a crime occurred or who may be responsible, they must first determine who the victim was.

A victim's identity is the key that unlocks nearly every subsequent stage of an investigation. Once investigators know who the victim was, they can reconstruct the individual's movements, identify family members and associates, determine where they lived and worked, review missing person reports, examine financial and digital records, and begin understanding the circumstances that led to the person's disappearance or death. Until identity is established, many of those investigative pathways remain unavailable.

For this reason, identifying unknown human remains has always been both a humanitarian responsibility and an investigative necessity. Families deserve answers about what happened to their loved ones. Tribal communities deserve the opportunity to restore dignity to those who have remained unidentified, sometimes for decades. Law enforcement deserves the opportunity to pursue justice armed with the information that only identification can provide.

These objectives are closely connected. Identification is often viewed as the conclusion of an investigation because it provides a name to an unknown individual. In reality, identification frequently marks the beginning of the next phase of an investigation. Once identity is established, investigators can begin asking questions that previously could not be answered. Where did this person live? When were they last seen? Who knew them? Were they ever reported missing? What circumstances surrounded their disappearance? Those questions often generate the first meaningful investigative leads.

The importance of identification extends beyond humanitarian considerations. In a recent peer-reviewed retrospective analysis¹ that my colleagues and I conducted of 477 unidentified human remains cases successfully resolved using modern forensic DNA methods, more than one-quarter of homicide cases were associated with criminal charges, convictions, or the identification of deceased or serial offenders following identification. We also found that approximately seven percent of cases initially classified as having an undetermined manner of death were subsequently determined to be homicides after the victim had been identified. These findings demonstrate that restoring identity provides answers to families while also strengthening public safety by uncovering violent crime and creating new investigative opportunities.

The Evolution of Forensic DNA

To understand why these advances are so significant, it is helpful to understand how forensic DNA has traditionally been used. For more than three decades, forensic DNA has been one of the most effective investigative tools available to law enforcement. DNA profiling and the establishment of the FBI's Combined DNA Index System (CODIS) transformed criminal investigations by making it possible to compare biological evidence recovered from crime scenes against DNA profiles obtained from known individuals. These technologies have identified violent offenders, excluded innocent individuals from

¹ C. Lasyone, B. Budowle, K. Mittelman, & D. Mittelman. (2025) Investigative and policy impacts of forensic genetic genealogy in the identification of human remains. *Forensic Science International: Synergy*, 11, 100651.

suspicion, linked crimes committed across multiple jurisdictions, identified victims of mass disasters, and strengthened confidence in the criminal justice system.

Traditional forensic DNA is fundamentally a technology for comparison. Biological evidence recovered during an investigation is analyzed and compared against DNA profiles that are already known. Those known profiles may belong to convicted offenders, criminal suspects, missing persons reference samples, or biological relatives who voluntarily provide DNA to assist an investigation. Regardless of the circumstance, the underlying question remains the same: Does this DNA match someone we already know?

When an appropriate comparison sample exists, this approach is highly effective and remains the foundation of modern forensic investigation.

Many investigations, however, begin without any known individual against whom a comparison can be made.

This is particularly true in cases involving unidentified human remains. The individual is often unknown. Their DNA is generally not present in CODIS because they are victims rather than convicted offenders. Even when family members are searching for a missing loved one, traditional forensic DNA typically depends upon the availability of a close biological relative, most commonly a parent, child, or full sibling, who has submitted a reference sample for comparison. In many cases, those relatives may not know where to submit DNA, may never have reported the individual missing, may no longer be living, or simply may not exist. Investigators may possess a high-quality DNA profile from the unidentified individual yet still have no appropriate person against whom that profile can be compared. Under these circumstances, even a high-quality DNA profile may not produce an identification because there is simply no one to compare it against.

Forensic DNA Today

Over the past decade, advances in DNA sequencing have fundamentally expanded the capabilities of forensic DNA. Traditional forensic DNA relies on approximately twenty genetic markers to determine whether biological evidence matches a known individual or a close biological relative. Modern forensic DNA examines hundreds of thousands of genetic markers across the genome. This is not simply more information. It is a fundamentally different scale of information, making it possible to identify more distant biological relationships and generate investigative leads that previously did not exist.

For much of the past thirty years, DNA was primarily used to confirm an investigative hypothesis. Today, forensic DNA can often become the starting point of the investigation by identifying previously unknown biological relatives and generating entirely new investigative leads.

Traditional forensic DNA remains indispensable because it provides the most reliable method for confirming identity and supporting criminal prosecutions. Modern forensic DNA extends those capabilities into investigations that historically reached an investigative dead end because no suitable comparison sample existed.

Cases that once had little realistic path toward identification can now be revisited using scientific methods that simply did not exist when those investigations first began.

Why This Matters for the MMIP Crisis

The Missing and Murdered Indigenous Persons crisis presents many of the investigative challenges that have historically limited the effectiveness of traditional forensic DNA.

Many investigations begin years after an individual disappeared. Human remains may have been exposed to the environment for extended periods, resulting in degraded biological evidence. Cases often span multiple jurisdictions or contain incomplete investigative records. Families may be dispersed across different communities or may be unaware of the procedures for submitting DNA reference samples. In many investigations, there is no suspect, no immediate family reference sample, and no obvious investigative lead.

These are precisely the circumstances in which modern forensic DNA provides capabilities that were previously unavailable.

It is important to recognize that many unresolved MMIP investigations are not the result of inadequate investigative effort. Tribal law enforcement, the Bureau of Indian Affairs, the FBI, state and local law enforcement agencies, medical examiners, coroners, and forensic anthropologists have worked these cases with dedication and professionalism, often over many years or decades. The challenge has frequently been that the available scientific tools could not answer the questions investigators most needed answered.

Biological evidence collected years or even decades ago can now be reexamined using methods that provide substantially more information than was previously available. As DNA sequencing technologies have matured and genealogical resources have expanded, evidence that once yielded no investigative leads may now provide a realistic path toward identification.

For families, this means that cases once considered unsolvable may finally produce answers. For investigators, it means that long-standing investigations can be revisited with entirely new scientific capabilities rather than simply reexamining the same investigative theories. For Tribal communities, it means the opportunity to restore names to those who have remained unidentified, return loved ones home, and strengthen the pursuit of justice for victims whose identities have remained unknown.

These outcomes should not be viewed as separate objectives. They are different outcomes of the same investigative process. Identifying an unknown individual restores dignity to families and communities while simultaneously providing investigators with the information necessary to determine whether a crime occurred, identify witnesses, establish timelines, and pursue those responsible.

Operation Spirit Return

Recognizing the expanded capabilities of modern forensic DNA, the Bureau of Indian Affairs established Operation Spirit Return to apply advanced DNA sequencing and forensic genetic genealogy to missing and unidentified American Indian and Alaska Native individuals.

I have had the privilege of participating in this effort through Othram's selection as one of the laboratories supporting the program. While I cannot speak on behalf of the Bureau of Indian Affairs, I believe Operation Spirit Return reflects an important recognition that advances in forensic science have fundamentally changed what is now possible in long-unsolved investigations.

Operation Spirit Return is already demonstrating the practical impact of these capabilities. The following examples illustrate the kinds of cases that historically had little or no practical path toward identification using the forensic methods available at the time. They represent only a small sample of the individuals who have now been identified through the program.

- **Michelle Elbow Shield (South Dakota)** – Michelle's remains remained unidentified because investigators had no practical way to connect her to surviving relatives through traditional forensic

methods. Modern forensic DNA established those distant relative connections and ultimately restored her identity.

- **Glenn Thomas Tate Jr. (Sacaton, Arizona)** – Only partial skeletal remains were recovered from a remote desert location, leaving investigators with little evidence from which to establish identity despite extensive investigation. Modern forensic DNA provided the viable investigative path forward.
- **Martha Bassett (Will County, Illinois)** – Martha remained unidentified for more than five decades because no investigative leads connected her remains to a missing person. Modern forensic DNA generated those leads and ultimately restored her identity.
- **Blaine Has Tricks (Marysville, Washington)** – Blaine’s remains had been severely fragmented and disposed of in a landfill. He had never been reported missing, leaving investigators without context or investigative leads. Modern forensic DNA made identification possible despite those extraordinary circumstances.

Although each investigation was unique, they shared a common characteristic. The evidence to solve the case was always there, but the agencies lacked the resources and new technology to make the case solvable. Modern forensic DNA provided those leads, allowing these investigations to move forward after years, and in some cases decades, without meaningful progress.

The impact extends beyond restoring names to the unknown. In some investigations, establishing identity provides the foundation necessary to identify offenders and bring criminal cases to resolution. For example, the identification of **Teedeenae “Jackson” Yearby** provided investigators with a critical connection needed to identify his remains and advance a homicide investigation that ultimately resulted in a guilty plea from the assailant.

Equally important, the program recognizes that technology alone is not sufficient. Successful human identification depends upon collaboration among Tribal Nations, investigators, families, medical examiners and coroners, forensic anthropologists, forensic laboratories, prosecutors, victim advocates, and many others. Modern forensic DNA provides powerful new capabilities, but those capabilities are most effective when integrated into multidisciplinary investigations built upon collaboration, transparency, and respect for Tribal sovereignty.

Operation Spirit Return demonstrates what is possible when modern forensic DNA is applied to long-unsolved investigations. Continued support offers the opportunity to move beyond resolving individual cases toward systematically reducing the backlog of unidentified American Indian and Alaska Native individuals. It also establishes the investigative infrastructure, scientific expertise, and collaborative partnerships necessary to ensure that future cases can be resolved more quickly, reducing the burden on Tribal communities and law enforcement while increasing opportunities to identify offenders and provide answers to families.

Operation Spirit Return is therefore more than the application of a new laboratory method. It represents the practical implementation of a scientific capability that did not exist when many of these investigations began. It demonstrates how advances in forensic science can be integrated into existing investigative systems to produce meaningful outcomes for families, Tribal communities, and law enforcement.

The Opportunity Before Us

For decades, the national discussion surrounding unidentified human remains has focused on managing a backlog that could not realistically be eliminated using the scientific tools available at the time. Every successful identification represented an important achievement, but there was broad recognition that many cases would likely remain unresolved because investigators simply lacked the scientific capability to identify individuals when no investigative lead or appropriate family reference sample existed.

Today, advances in forensic DNA require that assumption to be reconsidered. Modern forensic DNA has fundamentally expanded what is scientifically possible. Rather than depending exclusively on a known suspect, a convicted offender, or an immediate family reference sample, investigators can now generate entirely new investigative leads from biological evidence itself. While no scientific method will solve every case, the capabilities available today are substantially different from those that existed when many unidentified human remains investigations began.

For the first time, the United States has the scientific capability to systematically reduce the national backlog of unidentified human remains rather than simply managing it.

That opportunity has particular importance for Indian Country. Every successful identification returns a loved one to a family, restores dignity to Tribal communities, reduces the investigative burden carried by Tribal and federal law enforcement, and, in some cases, provides the information necessary to identify violent offenders who otherwise might never be discovered.

The principal challenge is no longer scientific capability. The principal challenge is deployment.

The United States has already invested for decades in developing forensic DNA, building forensic laboratories, establishing CODIS, supporting medical examiner systems, and creating national programs for missing and unidentified persons. Advances in forensic DNA now create an opportunity to realize a far greater return on those investments by applying capabilities that did not previously exist.

The question before us is therefore not whether these technologies work. The scientific literature, operational experience, and growing number of successful investigations have already demonstrated that they do. The question is whether these capabilities will be deployed broadly enough to fundamentally change the trajectory of unidentified human remains investigations across the United States, including throughout Indian Country.

Recommendations

In light of these advances, I respectfully offer three recommendations for the Committee's consideration.

First, ensure that modern forensic DNA capabilities are available to Tribal Nations and the investigators serving Indian Country, regardless of geography or local resources.

Second, shift the national objective from managing the backlog of unidentified human remains to systematically reducing it. The scientific capability to make substantial progress now exists. Public policy should reflect that opportunity.

Third, continue supporting the scientific standards, accreditation, validation, and multidisciplinary partnerships that have made forensic DNA one of the most trusted forms of scientific evidence in the criminal justice system. Maintaining those standards will ensure that these expanded capabilities continue to earn the confidence of investigators, courts, Tribal Nations, and the public.

Conclusion

After nearly three decades working in genomics, I have never been more optimistic about our ability to restore names to the unknown.

For the first time, the United States has the scientific capability to systematically reduce the national backlog of unidentified human remains rather than simply managing it. This represents a fundamental shift from accepting a persistent backlog as inevitable to treating it as a solvable national challenge.

The opportunity before us is to ensure these capabilities are deployed at the scale necessary to return more loved ones to their families, reduce the burden on Tribal and federal law enforcement, and strengthen public safety across Indian Country.

Thank you for the opportunity to submit this testimony. I would be pleased to answer any questions.

Respectfully submitted,

A handwritten signature in black ink, appearing to be 'D. Mittelman', with a stylized flourish at the end.

David Mittelman
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Othram Inc.