

Whodunnit

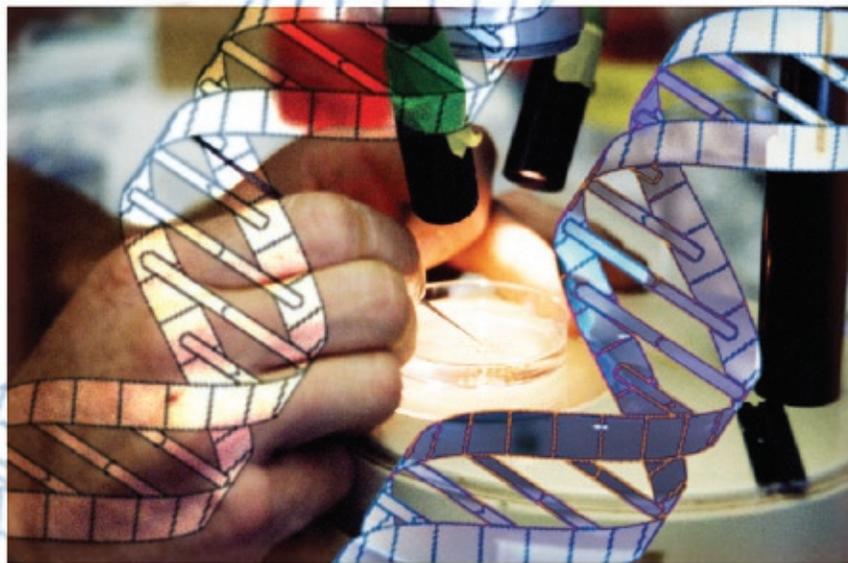
DNA Testing Exporter Helps Make the Case (or Not)

by Curt Cultice

ITA Office of Public Affairs

This past summer, people in southern Louisiana were frightened. Six people had been murdered. Was there a serial killer loose, and if so, where would he strike next? The police, working hard to solve the case, soon arrested a suspect. Then the police turned to ReliaGene Technologies, a leading DNA laboratory and research facility specializing in human genetic identification and paternity testing. What would the evidence show? ReliaGene lab professionals went to work, identifying evidence from the fingernail of the sixth victim. It was matched with the suspect. Now awaiting trial, the suspected serial killer's guilt will soon be determined by Louisiana's judicial system.

"It is impossible to overstate the dramatic impact these genetic tests have had in law enforcement, but on a human scale as well," says Dr. Sudhir Sinha, president and laboratory director of the minority-owned, New Orleans company. Looking at a readout of data, he continues: "Our testing can affect child support cases, the criminal justice system, and whether an accused person goes to jail or not." Sinha, who



has more than 30 years of experience in chemical and biochemical research and management, started the firm in 1990, and oversees a staff of more than 60 scientists, analysts, researchers, and support personnel.

Since 1990, ReliaGene has successfully produced genetic profiles of well over 300,000 biological samples—testing everything from saliva, semen, and tissue to loose and mounted hair, bone teeth, fetal tissue, and nail scrapings. Many of these have involved difficult criminal cases—homicide, sexual assault, burglary, criminal paternity, and victim identification.

PUTTING IT TO THE TEST

The company's DNA analysis falls under three categories: nuclear STR is most frequently used for forensic and paternity testing—such as determining whether a child is the legitimate offspring of a particular individual.

Y-chromosome STR tests the male chromosome passed to male offspring, and can be used to identify assailants in rape cases. Mitochondrial DNA sequencing, which tests genes passed from a mother to her children, is useful for aged or damaged samples from which DNA is difficult to obtain. This includes human bones, mummified tissue, and cut hair. "We are a full-service company, and one of only five private labs in the U.S. certified to use these advanced technologies for forensic case work," Sinha says. "Things really get interesting around here. People call in and ask us all sorts of questions, ranging from criminal investigators asking about feasibility of testing an old cadaver to an anxious wife who thinks her husband is a cheater and asks us to scientifically prove or disprove her claim."

ReliaGene has also performed important work for the Innocence Project, a non-profit legal clinic at the Benjamin

N. Cardozo School of Law in New York City. The Innocence Project handles cases in which post-conviction DNA testing of evidence can yield conclusive proof of evidence. Founded in 1992, the Innocence Project has exonerated 138 convicted people.

Another case involving ReliaGene was that of Richard Alexander, who spent four years of a 70-year prison sentence in Indiana for rape. But there were always the doubters, including detectives who never felt they had the right person. Then in 2001, the case was reopened when another man confessed to the rape. But for Alexander's conviction to be overturned, physical evidence of his innocence was needed. ReliaGene used mitochondrial analysis to test a strand of hair found on the victim; it did not match Alexander's hair. He was a free man. "It is amazing how much DNA identification technology has advanced over the last 10 years," Sinha says. "It used to be that the chances of a statistical error were one in a thousand; now it's one in over 10 billion."

According to Sinha, most of ReliaGene's business comes from state crime labs, private citizens involved in paternity cases, and work contracted out by private labs. The FBI is often overwhelmed, especially now with threats of terrorism. State crime labs often come to the FBI for advice on where to go for testing, and ReliaGene is one of a few laboratories with the expertise. Representatives from ReliaGene have also testified in important cases, helping to solidify its reputation. An important selling point is that the company has a turnaround of about four to six weeks, which is very fast compared with the average of four to six months for state crime laboratories. Sinha says the procedure for handling evidence samples is tightly controlled, and that more than 20 steps are taken from login to how the samples are processed. "Everything has to be handled carefully to prevent contamination which might alter the evidence," he says. "Everything here is considered top priority."

TECHNOLOGY AND GLOBAL TRUTH-TELLING

In Panama, there had been a denial of atrocities for years, but through the work of the Panama Truth Commission, a gruesome fact was verified: Many people had been murdered through the dictatorial rule of Panama's former leaders. With the help of canines that can detect the smallest human remains, samples were provided to ReliaGene for mitochondrial DNA sequencing to analyze and identify some of the victims, bringing a sense of closure for at least some of the victim's families.

Then there's the case of Larry Hillblom, the deceased founder of the worldwide courier service DHL, who died in a plane crash, leaving an \$800 million estate. Shortly after his death, several women in Asia who had given birth while teenagers claimed that they had carried his illegitimate children. Lawyers for Hillblom's California estate quickly sealed off the executive's compound to prevent any DNA from falling into other hands. Luck was not on their side, however. Entering the case, ReliaGene compared DNA from Hillblom with that of his allegedly illegitimate children, and three of the four children were fathered by the DHL executive—resulting in the payment of millions of dollars.

ReliaGene has also worked on a number of important cases for Canadian law enforcement agencies, and for the U.S. armed forces to help make identifications. In addition, ReliaGene markets a genotyping kit for Y-chromosome STR that is exported to more than 40 countries, mainly in Asia and Europe. Its foremost application is forensic cases, often involving sexual assault. The testing can identify a minuscule amount of male DNA, and distinguish between two or more men, which is especially important in sexual assault cases. Altogether, about 10 percent of the firm's sales are exports.

ReliaGene is also pursuing trade leads provided by the Commerce

Department's New Orleans U.S. Export Assistance Center. The relationship first started in 2001, when Sinha attended a Commerce Department seminar on doing business in Japan, and met local trade specialist Don Van de Werken and a senior Commercial Service officer from the U.S. embassy in Japan. Shortly thereafter, trade specialist Clif Gaston was "on the case." "We continue to identify several crime labs and organizations around the world that would benefit from ReliaGene's genotyping kit," says Gaston. "These labs utilize DNA testing in their analysis, and this kit would give them better technology, enabling them to duplicate in their own labs what ReliaGene does at its facility."

Sinha says his company cannot follow up on the leads fast enough, and he recently traveled to Italy to participate in the Gold Key Service, where he met with several potential business partners all vetted and organized by the Commercial Service. "Working with the U.S. Commercial Service gives us access to a global network of marketing and export counseling services, saving our firm time and money, and that's especially important for a small company like ours," Sinha says. "We fully expect to generate even more exports as a direct result of this assistance." ReliaGene was also recently presented with the U.S. Commerce Department's Export Achievement Certificate, which recognizes business clients of the U.S. Commercial Service that have attained success in exporting.

Looking under the microscope, Sinha studies another DNA sample, looking to see whether a DNA match can be made. "Our reliability is very exact, and we provide the utmost accuracy and quality assurance," Sinha says with great satisfaction. "People's lives ride on our results; it's often a matter of life or death." ■