A222 Identification of Missing Mexican Nationals Along the U.S. — Mexico Border

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The goal of this presentation is to educate the forensic science community on collaboration efforts between private and public industries in the United States and Mexican authorities to identify missing migrants that have crossed the U.S. – Mexico border.

This presentation will impact the forensic science community by outlining a system of identification efforts involving communication with several entities to effectively provide closure to family members who are missing loved ones. The attendees will gain knowledge of the scope of missing migrants from Mexico believed to have perished in the U.S. and how relationships can be formed to aid in identification efforts in both the U.S. and worldwide.

Each year migrants from Mexico, as well as other parts of Central America, attempt to enter the U.S. by crossing the U.S. – Mexico border and traveling across the southwestern desert areas of the U.S. Many migrants die in the desert areas during this journey due to exposure to the elements and exhaustion, and their bodies are recovered by U.S. authorities. There are numerous reasons why these bodies are not identified and why there is a need for forensic DNA testing to confirm suspected identifications. An international system has been created in recent years to aid in the identification of the missing and to have their remains repatriated to their families in their native countries. As a vendor laboratory, Bode Technology (the laboratory) has been part of this international effort, in collaboration with both U.S. and Mexican authorities, to identify missing Mexican nationals whose bodies have been recovered in the desert southwestern areas of the United States.

Up to several hundred Mexican nationals perish in the desert southwestern areas of the U.S., with most of these deaths occurring in Arizona as well as some in other states. The Mexican Foreign Ministry has taken a high interest in the identification of missing Mexican nationals and has been working with U.S. officials to aid in their identification. Most of the recovered bodies are kept at the Pima County, Arizona, mortuary facility where skeletal cuttings are collected and sent to the laboratory for forensic DNA testing. The Mexican Foreign Ministry works primarily with U.S. consulates, especially the Mexican Consulate in Tucson, Arizona. They contact family members who are missing loved ones where the families believe the individual attempted to enter the U.S., and arrange for the collection of relevant family DNA reference samples. The family reference samples are then provided to the laboratory for testing and comparison to the DNA profiles from the skeletal remains to determine if a familial relationship exists. If a familial relationship is identified, a DNA match report is generated and sent to the Consulate.

There has been a great deal of success and experience in the DNA analysis of skeletal remains, and over the years special techniques have been developed to troubleshoot these challenging samples. The DNA testing typically performed is a standard forensic test that analyzes 15 nuclear STR loci and a gender-determining marker. To date, close to 400 skeletal samples and 200 family references have been tested, resulting in more than 80 identifications from the country of Mexico. The success rate in obtaining suitable STR DNA profiles from the skeletal remains has been more than 80%. On a few occasions, additional DNA testing, such as Y-STR and mini-STR testing, was required, usually due to limited availability of family references. After the DNA profiles are obtained, they are entered into a computer software program in order to calculate kinship statistics. In the cases where a potential familial relationship was identified, the statistical calculations have generally yielded probabilities of family relationships of more than 99.95%, thus providing a high degree of confidence. This has been a highly successful system that is ongoing and is an example of how cross-border inter-governmental cooperation with private DNA providers can lead to closure for hundreds of family members.

Missing Persons, Human Identification, US-Mexico Border

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