Identification of the two missing romanov children

Academia - Research December 2009 Alexei and His Sister: Positive Identification of the Romanov Children In a field outside the Russian Ekaterinaberg, gateway to the Ural Mountains, during the summer months of 2007, a number of forensic biologists and investigators worked at the site of two digs. They were graves, containing human remains from a famous family whose fate is still the subject of media headlines. The Russian monarchy came to a violent end in 1918, early in the morning on July 17, assassinated and eventually taken out to the field that became the site of a modern forensic investigation. (New York Times, 2008) This paper discusses various methods used to determine the identity of the skeletal remains, and whether they were in fact the lost Romanov family, including Tsarevich Alexei (the royal heir) and one of his sisters.

‘ We report forensic DNA testing on the remains discovered in 2007 using mitochondrial DNA (mtDNA), autosomal STR, and Y-STR testing.’ This line from the examining officers’ report shows the tests used. (PubMed, 2009) A brief description of each will show how the team came to their conclusion.

A person’s mother-line ancestry can be determined with mitochondrial DNA testing. Mitochondrial DNA (mtDNA) is a type of DNA that is carried by both men and women but is only inherited from their mother. It is passed by a mother down to all her children. An exact match might mean the tested person is very likely to share a common maternal ancestor within the last 500 years. Exact matches are rare, but slight differences (one or two) can also lead to decisions about common relatives on the mother’s side. (Sorensen, 2009) The testing is done by sequencing nucleotides. The Romanov gravesite skeletons were tested in this way.

Autosomal STR testing examines Short Tandem Repeats, using the

knowledge that most humans share about 99 percent of their DNA, while the rest is very different. This small portion is examined because, although its function in the body is not completely understood yet, it provides a high degree of variation that can be measured and compared. (Orchid Cellmark 2009)

These sequences repeat a number of times - between six and 40 - in a particular location on the DNA. For example, ACGTACGTACGTACGTACGTACGT. Each person can have a different number of repeats in the same place. Many STRs occur on each chromosome. One subset has been developed for identity testing purposes. (Orchid Cellmark Ibid). This was used in the Romanov case, and helped the scientists decide the relationship between the skeletons and that they belonged to one family.

Y-STR testing is done on the Y-chromosome which is only present in males. The forensic team at the Romanov grave site knew that historically, there had to be at least two male skeletons related to each other, being Tsar Nicholas II and his son, the heir Alexei, who had the blood condition hemophilia. STR markers are able to distinguish between unrelated male individuals, because ‘ Men who share a common paternal ancestor will have virtually the same Y-DNA, even if that male ancestor lived many generations ago.’ (Sorensen 2009) Because the second gravesite was only discovered later, scientists thought Alexei’s remains were missing. When the second site was dug, and a second, younger male skeleton found, the Y-STR testing helped the forensic scientists make a conclusion that skeletons in both graves were related.

History, eye-witness accounts, written reports and even photographs taken

during the particular period have been used to support investigations about the disappearance of the Romanovs during that fateful day in 1918. This forensic report on the DNA samples taken from these two gravesites go a long way to solving this century-old mystery.

Sources Cited

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