

Part III: Molecular Analysis of People in a Mass Grave

1. Two “graves” were discovered near Yekaterinburg, Russia. Describe the number of bodies in each grave.
 - a. 11
2. When were these graves discovered?
 - a. 1991
3. One of the reasons that the family of Nicholas II was executed was because there was a fear that the White Russian Army would save them. Who was the White Russian Army?
 - a. The group that fought against communist during the Russian civil war.
4. What type of testing was done to confirm sex and familial relationships among the remains found in the mass grave?
 - a. Compared the DNA testing from the grave remains to the blood samples of living family members.
5. Genetically, what does STR “stand” for?
 - a. Short Tandem Repeats
6. What three types of DNA were used to test the remains found in a second grave?
 - a. mtDNA, autosomal STR, and Y- STR testing
7. Of the three types of DNA you listed in #32, which one would have been used specifically to identify Alexis?
 - a. Y- STR testing
8. What was the source of the DNA used to identify Alexis?
 - a. Femur Fragment
9. Was Anastasia in the grave in which Alexis was found?
 - a. No

Part IV: Who Wants to Be Anastasia?

10. Give a brief history (2-3 sentences) of Anna Anderson-both her claims and what is thought to be true.
 - a. She was a woman who claimed to be the Royal Duchess Anastasia, however through DNA testing it was discovered she was an imposter. The DNA testing was done at 3 different labs with the same results, which proves the samples were Anna Anderson’s and not someone else’s being tested and compared to Tsarina or HRH Prince Philip.
11. Where in the US did Anna Anderson eventually settle?
 - a. Charlottesville, VA
 - b. <https://www.history.com/this-day-in-history/anastasia-arrives-in-the-united-states>
12. Whom did she eventually marry?
 - a. J.E. Manahan
 - b. <https://www.history.com/this-day-in-history/anastasia-arrives-in-the-united-states>
13. What were the sources of Anna Anderson’s nuclear DNA?
 - a. Hair and intestines
14. What were the sources of Nicholas’ and Alix’s nuclear DNA?
 - a. bones
15. What type of analysis was done on DNA from Anna Anderson, Nicholas, and Alix?
 - a. STR and mtDNA
16. Anna Anderson’s mitochondrial DNA was compared to the mitochondrial DNA of what two people?
 - a. Carl Maucher and Duke of Edinburgh
17. A hypervariable region of the mitochondrial DNA was analyzed. Define a hypervariable region?
 - a. Hypervariable region is a portion in the genome that evolves at a faster rate than the average rate.
 - b. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1287875/>
 - c. <https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/hypervariable-region>
18. What were the conclusions from the mitochondrial DNA comparisons?
 - a. She is an imposter because she was not related to them.
19. The article which describes the analysis of Anna Anderson’s DNA was published in 1995. When were all of Nicholas’ and Alix’s children finally accounted for?
 - a. 2007

Part V: Current Hemophilia Treatment

20. Describe a current treatment for hemophilia.
 - a. The treatment for hemophilia is an injection of clotting factor concentrates into the person’s veins. This will replace the missing clotting factors and allow the blood to clot like a person who doesn’t have hemophilia.

