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Old Dominion University/BIOL303-Genetics/Rinehart-Kim/Module 9/Romanov Project

You may use various Internet sources to answer any of the questions, but please cite any sources that you use if they are not ones that I suggest.

Part III: Molecular Analysis of People in a Mass Grave

Use the following source to help you answer the following questions: *http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0004838 (You should be able to access the entire article.)*

1. Two “graves” were discovered near Yekaterinburg, Russia. Describe the number of bodies in each grave.

**The remains of five of the seven royal family members were found in grave Grave 1**

**No less than two people's remains were discovered in Grave 2 approximately 70 meters from the first grave.**

2. When were these graves discovered?

**Grave1- discovered in late 1970's**

**Grave 2- the summer of 2007**

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?

**In the early 1900s, they fought the Bolsheviks as an anticommunist force group. In spite of their efforts, the Bolsheviks prevented the rescue of the royal family.**

4. What type of testing was done to confirm sex and familial relationships among the remains found in the mass grave?

**Based on nuclear DNA testing of five STR markers, the remains have been confirmed to be of the same sex and to have close familial relationships.**

5. Genetically, what does STR “stand” for?

**Short tandem repeat**

6. What three types of DNA were used to test the remains found in a second grave?

**mtDNA, autosomal STR and Y-STR**

7. Of the three types of DNA you listed in #32, which one would have been used specifically to identify Alexis?

**mtDNA**

8. What was the source of the DNA used to identify Alexis?

**By examining the incipient sciatic notch of the other remaining, it was determined to be male.**

9. Was Anastasia in the grave in which Alexis was found?

**As far as we know, Alexei and one of his sisters were involved. Due to a rumor that an imposter is believed to be Duchess Anastasia, it might be Anastasia.**

Part IV: Who Wants to Be Anastasia?

Apparently, about 200 people have wanted to be Anastasia and have claimed to be her! One of the most famous imposters was a woman named Anna Anderson (Manahan).

Refer to the following source to help you answer some of the following questions: <http://www.nature.com.proxy.lib.odu.edu/ng/journal/v9/n1/pdf/ng0195-9.pdf> (Please note that this is a PDF of the article and is provided via the ODU Library.)

10. Give a brief history (2-3 sentences) of Anna Anderson-both her claims and what is thought to be true.

**Anna Anderson claimed she was Anastasia and was found to be an imposter through DNA testing. It was found on July 17, 1918, Anastasia and her immediate family were shot in a cellar by the Bolsheviks. Their bodies were thrown into an abandoned mine pit and later buried.**

11. Where in the US did Anna Anderson eventually settle?

**Charlottesville, Virginia.**

12. Whom did she eventually marry?

**Dr. John Eacott Manahan**

13. What were the sources of Anna Andersons’s nuclear DNA?

**Her hair strands and samples taken during her surgery at Martha Jefferson Hospital were the sources.**

14. What were the sources of Nicholas’ and Alix’s nuclear DNA?

**their bones**

15. What type of analysis was done on DNA from Anna Anderson, Nicholas, and Alix?

**STRs of six different types and amelogenin as an additional test.**

16. Anna Anderson’s mitochondrial DNA was compared to the mitochondrial DNA of what two people?

**HRH Prince Philip, the Duke of Edinburgh and Carl Maucher.**

17. A hypervariable region of the mitochondrial DNA was analyzed. Define a hypervariable region?

**In hypervariable regions, there is a high ratio of different amino acids in a given position compared to the most common amino acid.**

18. What were the conclusions from the mitochondrial DNA comparisons?

**There was no connection between Anna Anderson and Anastasia, and she was an impostor.**

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?

**The remains have not been identified as belonging to Anastasia or Maria by 2007, but they are all accounted for by 2007.**

Part V: Current Hemophilia Treatment

Refer to the following web site: <https://www.cdc.gov/ncbddd/hemophilia/treatment.html#:~:text=The%20best%20way%20to%20treat,concentrates%2C%20into%20a%20person's%20vein>.

20. Descibe a current treatment for hemophilia.

**Hemophilia can be treated by replacing the missing blood clotting factor so that the blood can clot properly. People are usually treated with clotting factor concentrates, which are injected into their veins.**