

RE III INTRODUCTION

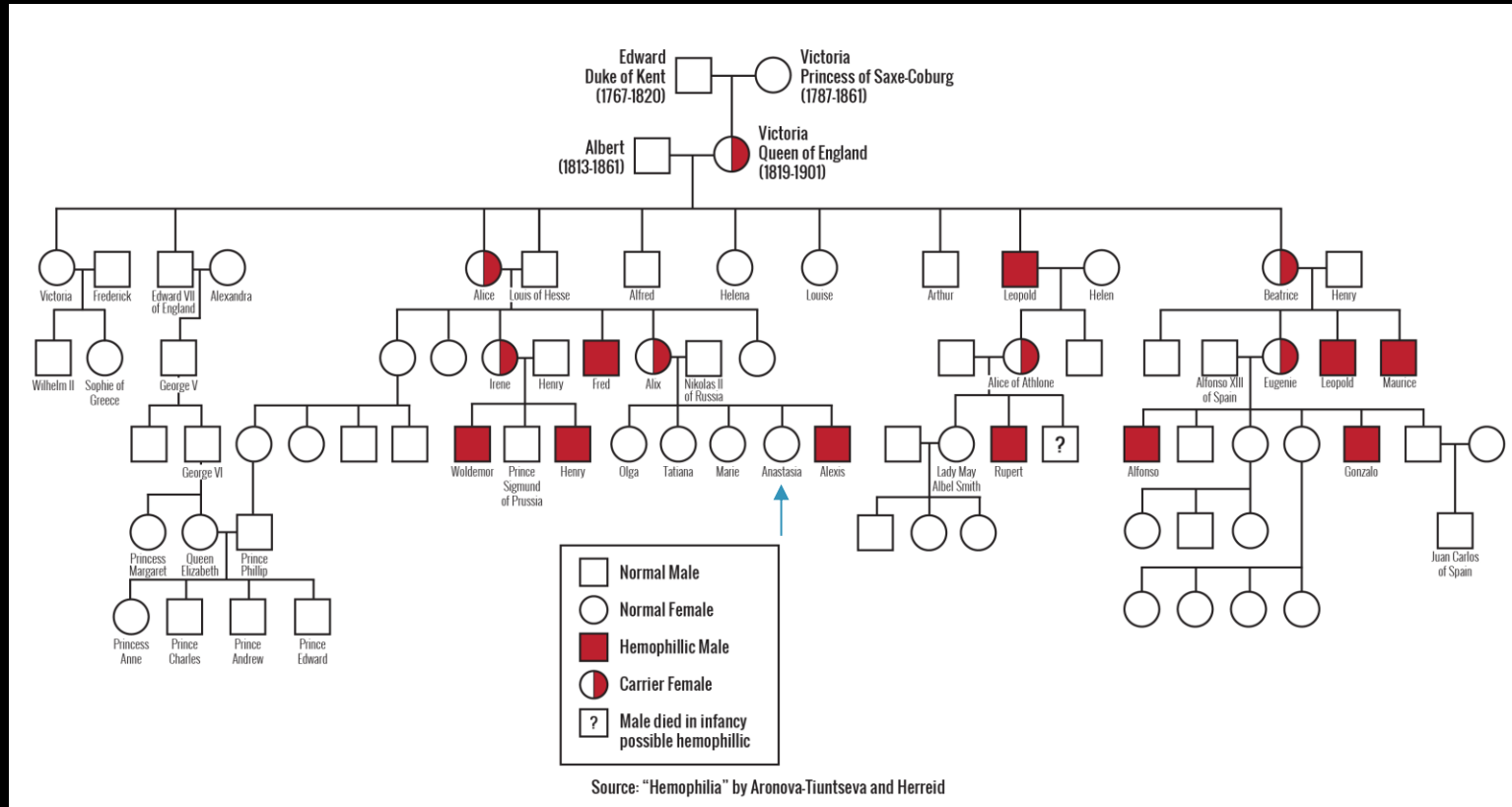
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https://en.wikipedia.org/wiki/Execution_of_the_Romanov_family#/media/File:Russian_Imperial_Family_1913.jpg

THE ROMANOV FAMILY

In 1894, Nicholas II Romanov married Alexandra, daughter of Princess Alice, daughter of Queen Victoria. The couple had five children, as shown in the family tree below. Their son Alexei had Hemophilia. This is the known family tree.



THE END OF THE HOUSE OF ROMANOV

- In January 1918, the Romanov family was executed during the uprising of the Bolshevik revolution.
- There are several accounts of what happened, but it is believed that an angry mob shot all family members, burnt the bodies, and disposed of them in the forest.
- Some ten years later (1979), the bodies were discovered by an amateur archaeologist.
- It quickly became apparent that **one body that of Anastasia may be missing.**



SHOWS THIS DAY IN HISTORY SCHEDULE TOPICS STORIES

HISTORY STORIES

Why the Romanov Family's Fate Was a Secret Until the Fall of the Soviet Union

Missing remains and a Bolshevik cover-up after the brutal execution of the imperial family fueled wild rumors.

ERIN BLAKEMORE • UPDATED: MAR 29, 2019 • ORIGINAL: OCT 18, 2018

<https://www.history.com/news/romanov-family-bodies-discovery-coverup>

WHAT HAPPENED TO ANASTASIA?

- Anastasia was the youngest daughter of Tsar Nicholas II. She was delivered by Grigori Rasputin, a Russian peasant and a questionable doctor who spent much time drinking.
- He reported that Anastasia was born in 1901. Family portraits indicate that Anastasia had blue eyes and strawberry-blonde hair.
- Unfortunately, much of the DNA evidence was unclear, mainly due to the poor condition of the findings.
- By 1931, five women claimed that they were the real Anastasia. In 1932, DNA evidence (assume they existed back then) and testimonies were collected from most people involved.



SHOWS THIS DAY IN HISTORY SCHEDULE TOPICS STORIES

THIS DAY IN **HISTORY** | FEBRUARY 06 ▾

1928

February 06

Woman claiming to be Anastasia Romanov arrives in the U.S.

<https://www.history.com/this-day-in-history/anastasia-arrives-in-the-united-states>

Your task is to solve the mystery of what happened to
Anastasia Romanov



https://en.wikipedia.org/wiki/Grand_Duchess_Anastasia_Nikolaevna_of_Russia#/media/File:Grand_Duchess_Anastasia_Nikolaevna_Crisco_edit_letters_removed.jpg

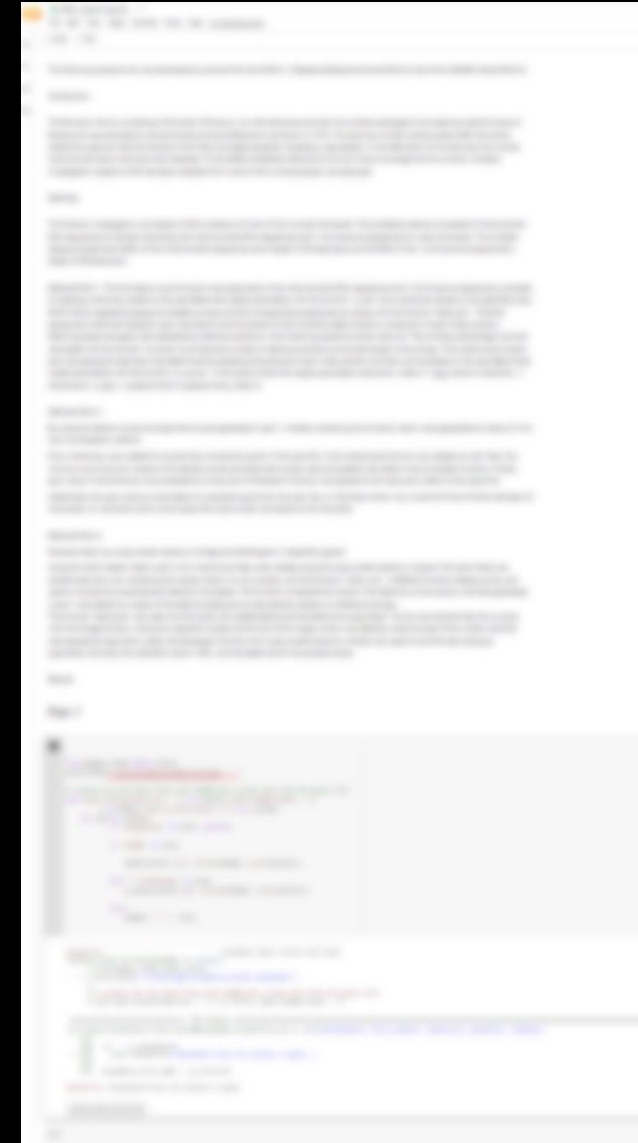
YOUR EXERCISE

1. Do multiple sequence alignments of DNA sequences (**student I**).
2. Build a similarity matrix (**student II**).
3. Calculate a *hierarchical clustering* of the samples (**student III**).
4. Write an essay that summarizes your methods and findings and answers the questions above (all students)
5. Deadline: 29/10 at 17:00
6. **Bonus.** Groups who submit all their materials on time with the **correct answer** will receive 5 extra points for their final grade for each member. Note, multiple submissions will disqualify you from the bonus
7. **Grade.** 50% of your grade will be based on your code, and 50% will be a group grade based on your essay.

You have plenty of time!

TIPS

- You can write the essay in Google Colab along side your code or submit the Google Colab & essay separately.
- Do not wait for each other's products. Create temp files and work with those.



PAST STUDENTS LOST POINTS BECAUSE...

- Comments were wrong \misleading
- No support for incorrect input or ?
- Debug printing was left active
- Hard coding stuff
- Inefficient code
- We were able to crash the code (code is not robust)
- Code is poorly organized (import in the middle of the script)
- Google Colab file (.ipynb) was not submitted
- Figures had no legend
- Essay does not answer the main question of **what happened to Anastasia**

GRADING

- Late submissions are penalized – 1% off per minute
- Detailed documentation block (5%)
- Well-detailed comments in the code (5%)
- Code is robust (not crashing, QC on input) (10%)
- Is the code correct and not poorly written (code is efficient and produces the right answer) (30%)
- Essay (50%)

Q&A - EXAM

