Bones Lab Notes

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1 Forensic Science Lab Report

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1.1 Abstract

In lab, we inspected some plastic bones that are fictitiously linked to missing persons cases and used our knowlege of forensic anthropology to formulate a hypothesis about which bones belong to which missing person case and then using genetic data from the bones and the missing persons to test the hypothesis.

1.2 Methodology

1. Record observations about the bones to identify probably attributes of the person.
    1. Included attributes
        1. Sex
            1. pelvis structure
        2. Ethnicity
            1. Skull structure
        3. Height
            1. Length of the femur
2. Use these observations to make a hypothesis about who is the likely associated missing person on the chart.
3. Test our hypothesis by comparing the DNA of the bones with the known DNA of the missing person using a tool called NEBCutter2.0

1.3 Bones Lab Observations

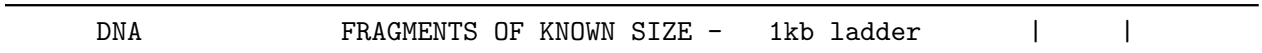
- Bones Group: A
- Pelvis
    - Pubic Angle
        - less than 90 degrees
    - Sciatic Notch: Broad
    - Inlet shape: Broad
    - **Likely female.**
- Skull
    - No overbite

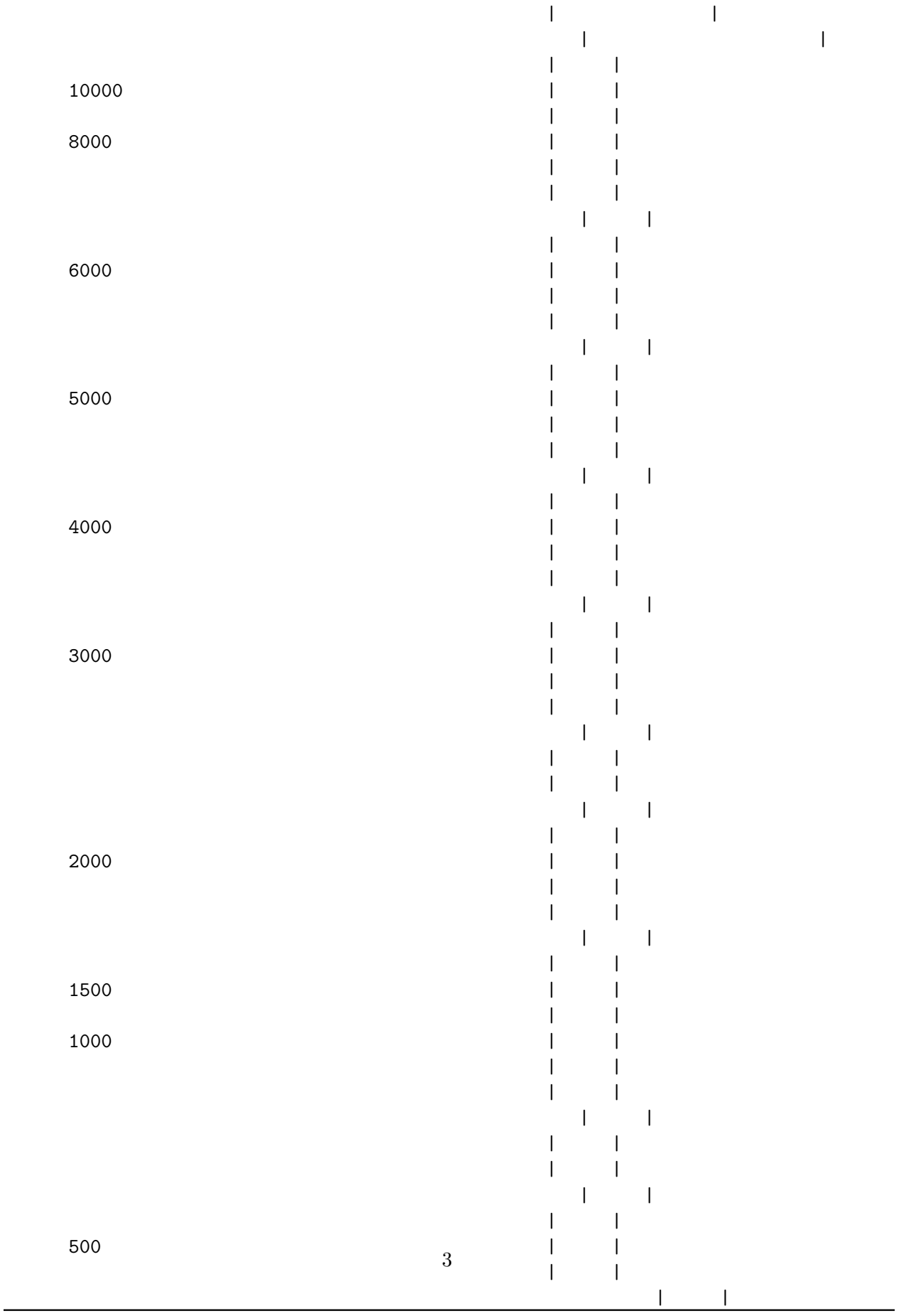
  - Facial profile: round.
  - Nasal Sill: present
  - Nasal opening: narrow.
  - Nasal Bridge: not high bridged
  - Cheek bones: high
  - **Likely Asian**
- Femur
  - Length: approx 40 cm
  - estimated height (cm): 152.9 cm
    * Converted to inches: ≈ 5.01 inches
    * **Closest heights on chart:**
      · 4'11"
      · 5'0"
- Most likely missing person based on observations:
  - **LT**
    * Chinese Female with a height of 4'11" most closely matches our observations.

1.4 Hypothesis

- Our hypothesis is that the bones from group "A" belong to missing person "LT".

1.5 DNA Tests using NEBCutter 3

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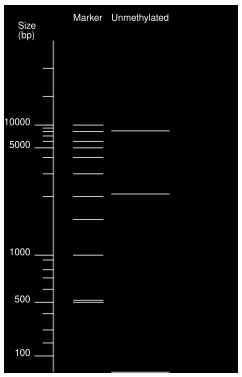
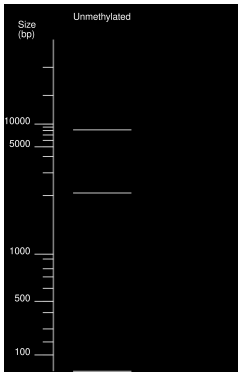
1.6 Appendix A (Raw Data)

1.6.1 Bone Set A NEBCutter Gel Render



1.6.2 Missing Person LT NEBCutter Gel Render



1.7 Appendix B (Calculations)

[ ]:
```python
# Calculations used to get height from femur length

femur_length = 40 # cm

def height_female_from_femur(femur_length):
    return 2.47 * femur_length + 54.1

def cm_to_inches(cm):
    return cm / 30.48

estimated_height = height_female_from_femur(femur_length)

print(estimated_height, "cm")

print(cm_to_inches(estimated_height), "inches")
```

```
152.9 cm
5.016404199475065 inches
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