Anthro 101L: Human Biological Evolution

Lecture 1: Intro & Scientific Method

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Anthropology: Study of Humans
+ How Evolution Works
To understand why we are the way we are, we need to know

- How the scientific method operates
What is Science?

- Process of explaining natural phenomena through observation and experimentation
  - Measure observed phenomena
  - Test hypotheses
  - Follow the Scientific Method
What is a hypothesis?

- provisional explanations requiring verification or falsification through testing
  - proposes a causal relationship between two variables
  - Predict how X will affect Y

- **(X) Independent** variable(s) – things that are
  - Water, sunlight, soil

- **(Y) Dependent** variable(s) – things that are affected
  - Height of plant
  - Thickness of roots
  - Number of leaves
The Scientific Method

• Question
• Read
• Hypothesis
• Methods
• Collect data
  - Rigorous & replicable
  - Quantitative
  - Statistics
  - Falsifiable
• Relate back to your hypothesis

Repeat!
Theory or Law

- A **theory** explains something and is supported by a lot of testable evidence.
- A **law** is a description of a phenomenon that is consistently observed under specific conditions.
Why we use the scientific method

- Testable (falsifiable) hypotheses
- Replicable methods
- Competition and collaboration among scientists

- How are you going to do this?
  - Methods
  - Tools
How to Observe a Subject

- Note-Taking is Essential!
- What kinds of Data to collect about behavior?
- “Basic” Observations vs. “Behavioral” Observations
- Observer affects the Observed
- Observer Error
Lab Tools
Anthropometry
A.K.A “Measuring Humans”

- Spreading Calipers
Sliding Calipers
- Zero Out
- Choose Measurement Type (MM/CM)
- Always Turn it Off
- Store Correctly
• **Osteometric Board**
Measurement Conversion

- Centimeters to Inches
  - 1 in = 2.54 cm [IN to CM = multiply] [CM to IN = divide]

- Centimeters to Millimeters
  - 1 cm = 10 mm [CM to MM = multiply] [MM to CM = divide]

Please round all numbers to TWO decimal places (i.e. 78.6666 becomes 78.67)

- 13.4 in = ________ cm
- 456 mm = ________ cm
- 754 cm = ________ in
Your First Lab

- Get contact info from 3 people sitting near you, who are registered for the class (at the end of the table you can have groups of 5)
- Go over the handout
- You can start with you outside observations or in class stations
- The first lab is due at the end of the class