



**Pre-Laboratory Questions:**

- 1) If humans are the same species, why are certain regions of our DNA variable (i.e. different sequence of DNA bases) from person to person?
  - a. What factors might give rise to variation within the total gene pool of a human population?
  - b. Describe the factors that might give rise to variation in DNA sequence between offspring and parents.
  
- 2) Imagine that you are a forensic investigator. Name at least three different types of evidence that might be collected at a crime scene from which you could extract DNA.
  - a. What are some hurdles that may be associated with collecting sufficient DNA evidence from samples obtained at a crime scene (*Hint*: think about the origin of the evidence, the amount, etc.)?

**During Laboratory Questions:**

- 1) Chelex is an important tool for this DNA extraction.
  - a. What is the purpose of the Chelex resin? How does charge play a role in its function?
  - b. Once our concentrated cell solution is added to the Chelex, the entire mixture is placed in the thermal cycler for a ten-minute boil cycle. What is the purpose of boiling the mixture and why should we not carry out this step before the boiling step?
  
- 2) Specifically describe the target of our PCR reaction. What region of the genome will we be amplifying and on what chromosome is it found?

