

Objectives: by the end of this unit, students will be able to...

- Summarize the characteristics and purposes of each of the following: a. Genomics b. PCR c. Gel Electrophoresis d. Southern Blotting e. ELISA
- Explain how DNA is 'opened' to make copies during PCR.
- Summarize the purpose and role of a primer in PCR.
- Summarize the purpose and role of a thermal cycler in PCR.
- Describe the purpose and role of a Taq polymerase in PCR, and why a regular polymerase cannot be used.
- Explain the purpose and role of a restriction enzyme prior to gel electrophoresis.
- Summarize why different individuals have different banding patterns when their DNA is cut and run through a gel.
- Use a DNA fingerprint to determine which suspect is tied to the scene of a crime.
- Use PCR Electrophoresis to determine whether members of a family carry a disease, have a disease, or have a normal genotype.
- Use a DNA Fingerprint to determine if a parent is the biological parent of a child.
- Compare and contrast the similarities and differences between PCR and Southern Blotting.
- Identify cases in which Southern blotting would NOT be effective as a diagnostic test.
- Use a Southern blotting gel to determine whether an individual carries or is affected by a genetic disease.
- Summarize the role and purpose of ELISA.
- Compare and contrast the similarities and differences between an antigen and an antibody, and how this is used to create an ELISA test result.
- Use ELISA test results to determine if an individual carries an infectious disease.
- Explain how the severity of an infectious disease can be determined by ELISA.