

## Vocabulary: DNA Profiling



### Vocabulary

- DNA polymerase – an enzyme that synthesizes (builds) DNA from nucleotides.
- DNA profiling – a forensic technique used to identify individuals based on their DNA.
  - The DNA profiles of suspects and evidence are compared to look for matches.
  - This technique is also called DNA fingerprinting.
- Gel electrophoresis – a technique used to separate molecules (such as DNA) by size.
  - Charged molecules move through a gel as an electric current is passed across it.
  - Smaller molecules migrate through the porous gel farther than larger molecules.
- Gene – a segment of DNA that gives instructions for building a protein.
  - Other than some small variations, the genes of different individuals are usually close to identical and of the same length.
- Mutation – a change in the DNA.
  - A mutation in a gene may change the function of that gene. Mutations in non-coding regions often have no effect on traits.
- Non-coding region – a region of DNA that does not code instructions to build a protein.
  - Non-coding regions make up 99% of the DNA in the genome, while genes only account for about 1% of the DNA.
  - Some non-coding regions contain short tandem repeats (STRs).
- Polymerase chain reaction (PCR) – a technique used to make multiple copies of a specific segment of DNA.
  - Primers (short segments of DNA) bind to either side of a region of interest.
  - DNA polymerase is then used to copy the DNA between the primers during a series of heating and cooling cycles.
- Primer – a short DNA sequence that provides a starting point for DNA synthesis.
  - A primer is designed to be complimentary to a specific region of DNA.
  - Two primers that surround a region of interest in the genome can be used to amplify (copy) that region of DNA.
- Short tandem repeat (STR) – a short sequence of DNA, usually 2-7 nucleotides in length that repeat multiple times in a row. STRs are also called microsatellites.
  - The number of repeats varies between different individuals.
  - Some examples of STRs are AATG, TA, AGAT and GATA