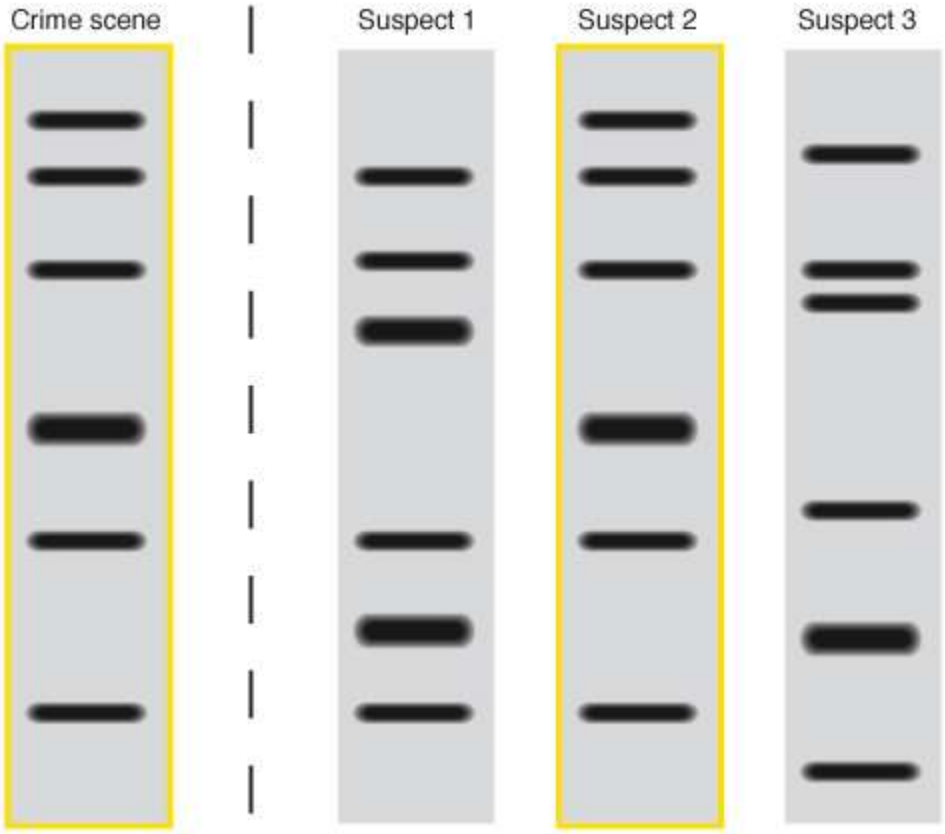
DNA Fingerprinting



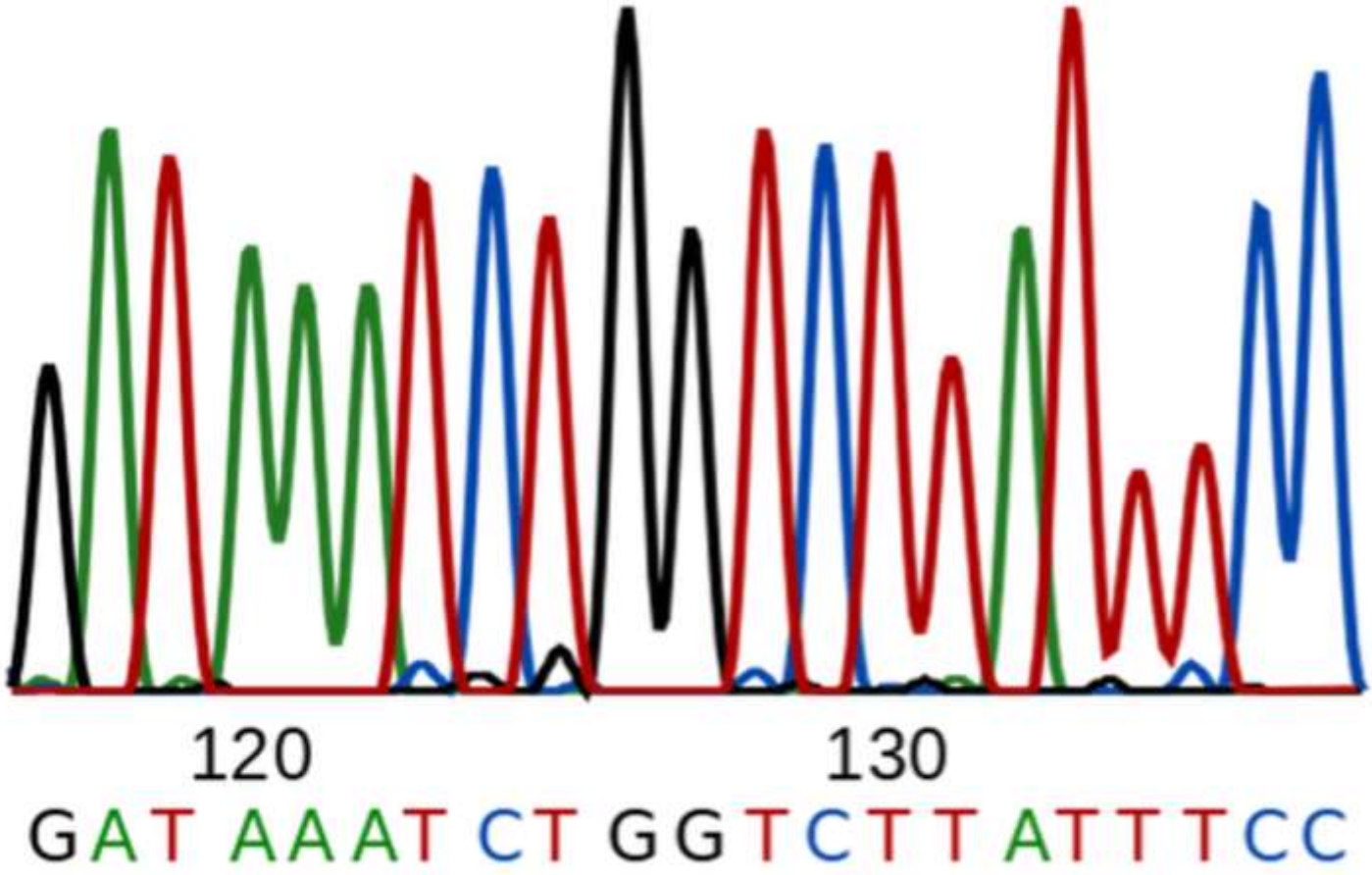
Description

- Unique patterns made by different samples of DNA
  - Identical patterns mean the same source of DNA (1 individual)
  - Similar patterns mean a genetic relationship (heredity, common ancestor)

Examples/Uses

- Forensics (criminal justice)
- Paternity testing
- Determining evolutionary relationships

DNA Sequencing



Description
"Reading" the exact nucleotide sequence of a strand of DNA

Examples/Uses

- **The Human Genome Project – determining the exact genetic code of human beings**
  - Identify causes of genetic diseases
- Everything DNA fingerprinting can do, but better (but more $$)

Recombinant DNA / Genetic Engineering

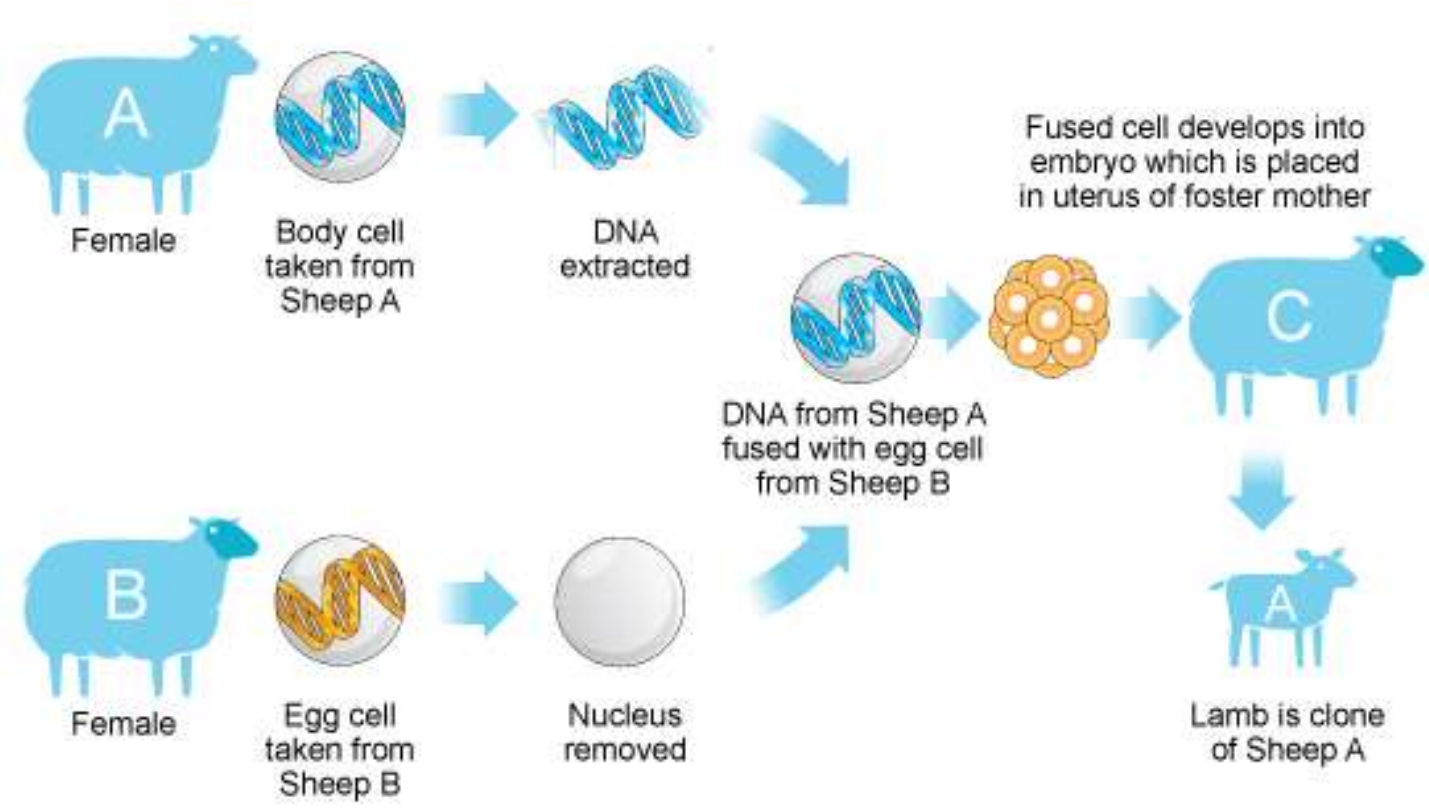
Description

- Inserting one organism's DNA into the genome of another
- Any organism is able to "read" any other organism's DNA because the "code" is universal.

Examples/Uses

- Genetically modified organisms (GMOs)
- Scientific research
- Medicine and gene therapy

Cloning



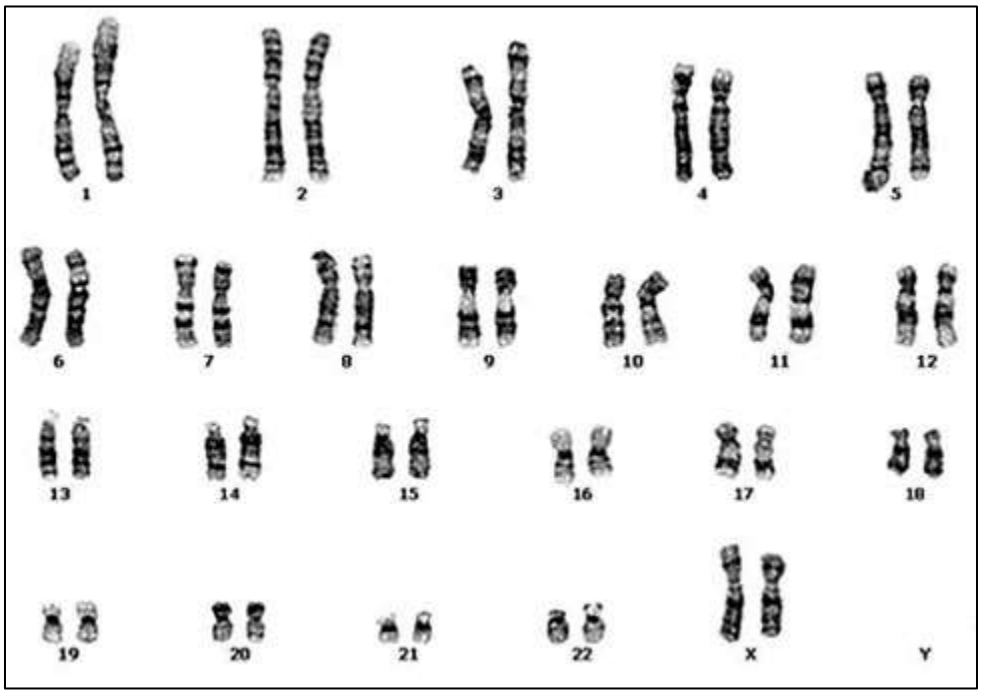
Description

Use the <u>body cell</u> (not a sex cell) of 1 adult to make a genetically identical individual

Examples/uses

- Scientific research
- Making copies of genetically engineered organisms

Karyotyping



Description

- Organizes the chromosomes of a person into homologous pairs

Examples/uses

- Identify chromosomal mutations and certain medical conditions (e.g. triploidy 21, Down's Syndrome)
- Identify sex (males XY, females YY)