

- steps 2-4 are continually repeated on the new DNA to yield the necessary number of copies
- Gel Electrophoresis (agarose gel): used to separate DNA by size so it can be visualized
 - DNA is ran through agarose gel
 - DNA has a negative charge
 - to move DNA through the gel we attract it to a positive electrode
 - shorter pieces will move through the gel easier & quicker
 - DNA can also be extracted from the gel
- DNA sequencing: a modified form of PCR
 - instead of putting in raw nucleotides a small subset of dideoxyribose is also added
 - dideoxyribose differs from deoxyribose b/c it has no hydroxyl group (just a hydrogen group)
 - dideoxynucleotide stops the extension of the growing strand of the DNA
- PCR reaction in DNA sequencing reactions:
 - Primer for replication
 - 4 reaction mixtures are prepared: a diff. replication-stopping nucleotide (dideoxynucleotide) is included
 - 4 separate reactions (each one of them contain a small amount of a dideoxynucleotide)
 - polymerase will grab a dideoxynucleotide ever so often & the strand will be terminated at that position & will no longer grow
 - running these 4 reactions & putting it into the gel you'll see every possible one nucleotide difference link of DNA sequences
- Sanger DNA sequencing
 - running this reaction will give you fragments of every possible length that corresponds to the termination of a dideoxynuc.
 - wherever a dideoxynuc. is in the strand of DNA that is where the nucleotide is present
 - this process is carried for all 4 bases & the fragments are put together like a jigsaw to determine the sequence of DNA
 - reading the gel from the bottom up will give you the DNA sequence
- PCR in action: DNA profiling
 - DNA profiling: a technique used by forensic scientist to assist the ID of indiv. by their unique DNA profiles
 - one major method of DNA profiling used today is based on PCR & uses short tandem repeats (STR): repeated sequences of DNA we are aware of
 - ex: CGCGCGCG or CAGCAGCAG (repeated sequences of DNA)
 - STRs (also called microsatellites) are highly polymorphic regions of DNA that have short repeated sequences of DNA
 - in North America, a group of 13 sites for STR in human DNA are used to generate a DNA profile for a given indiv.
 - each indiv. will have a given allele for an STR at a given site in their DNA; each site (called a locus, plural loci) has multiple alleles (diff. versions) possible