**Course: Advance Bio Informatics**

**Module Title: DNA Profiling Generation Methods**

**Module No: 111**

**DNA Profile Methods**

**Polymerase Chain Reaction (PCR)**

Replicate a small amount of DNA to create a larger sample for analysis. First, a heat-stable DNA polymerase -- a special enzyme that binds to the DNA and allows it to replicate -- is added.

Next, the DNA sample is heated it to 200 degrees F (93 degrees C) to separate the threads. Then the sample is cooled and reheated. Reheating doubles the number of copies. Process is repeated about 30 times, there is enough DNA for further analysis.

**Analyzing STRs**

* PCR is the first step in analyzing STRs (Short Tandem Repeats), which are very small, specific alleles in a variable number tandem repeat (VNTR).

**Short Tandem repeats**

Analyzing STRs is more accurate than the RFLP technique because their small size makes them easier to separate. If you want to create a fingerprint, you might look at 20 different STRs at different places in order to create a profile.  It is impossible for two persons to have same number of STR repeated in a given sequence.

**Y-chromosome Analysis**

* STRs in Y-chromosome
* Useful if the sample has mixed DNA.
* Gender analysis cases.
* It is processed just like simple STR analysis.

**AmpFLP**

Amplified fragment length polymorphism, is another technique that uses PCR to replicate DNA.

Like RFLP, it first uses a restriction enzyme. Then, the fragments are amplified using PCR and sorted using gel electrophoresis.

* Can be automated
* Doesn't cost very much.
* DNA sample must be high quality otherwise errors may result, which is the case with most DNA analysis techniques.