**Stage 2 Biology – DNA & Proteins**

**Key Processes:**

**Protein Synthesis:**

Transcription

mRNA processing (splicing)

Translation

DNA Replication (semiconservative)

Enzyme controlled reactions (induced fit)

Gene expression – and factors that affect it

Mutations

PCR

**DNA Profiling:**

DNA Profile Using Gel Electrophoresis

DNA Profile Using STRs

 Electropherogram

 Table

DNA Profile Using SNPs - electropherogram

**DNA Sequencing:**

DNA Sequencing (Gel Electrophoresis & ddNTPs one at a time)

DNA Sequencing (Capillary Electrophoresis & ddNTPs)

**Cutting DNA using restriction enzymes**

**Biotechnology & Genetic Engineering:**

1. Locate and copy gene of interest
2. Insert Gene into Host (making transgenic cell/organism)

Bacterial plasmid Vector

Viral Vector

Microinjection

Electroporation

Bacterial Transformation

CRISPR/Cas9

* Locating gene
* Editing a gene

Designing New Proteins