AP Biology – Molecular Biology Unit

Chapter 16 – The Molecular Basis of Inheritance

* Early experimental evidence (Griffith, Hershey & Chase, Chargaff, Watson & Crick)
* DNA Structure
* DNA Repliction
  + Enzymes involved
  + Elongation direction and orientation (ie. Leading vs. Lagging)
  + Function of telomeres

Chapter 17 – From Gene to Protein

* Central Dogma (DNA🡪RNA🡪Protein)
* Process of Transcription and Translation
  + Location
  + Elongation and orientation
  + Triplets, codons, and anti-codons
  + Enzymes involved
  + mRNA processing (introns vs. exons, Poly-A tail, 5’ cap)
  + Structure of ribosomes
* Mutations

Chapter 18 – Microbial Models: Bacteria and Viruses

* Regulation of Genes in Bacteria (*lac* and *trp* operons)
* Viral structure and genetic make-up
* Lytic vs. Lysogenic reproduction cycles

Chapter 19 – Regulation of Eukaryotic Chromosomes

* Levels of Chromatin packing – function of histones
* Functions of methylation and acytelation
* Control of gene expression during the pathway from gene to protein
* Oncogenes, proto-oncogenes, tumor-suppressing genes
* p53 protein, *ras* protein

Chapter 20 – Biotechnology

* Restriction Enzymes
* Transformation
* PCR
* cDNA
* Gel Electrophoresis