**Molecular Genetics Exam Review**

* Mitosis & Meiosis
  + Types of reproduction
    - Asexual – purpose, costs, benefits
    - Sexual – purpose, costs, benefits
    - Comparison between asexual and sexual reproduction
  + Cell division
    - Cell cycle
    - Mitosis – purpose, phases, chromosome number, genetic variation, # of cells daughter cells produced
    - Cancer – as it relates to cell division
  + Gamete production
    - Meiosis - purpose, phases, chromosome number, genetic variation, # of cells daughter cells produced
      * Principle of Segregation – explanation; how it increases genetic variation
      * Principle of Independent Assortment – explanation; how it increases genetic variation
    - Fertilization – as it relates to meiosis & chromosome number
    - Nondisjunction – causes, karyotype interpretation, trisomy 21
* Structure of DNA & RNA
  + Relationship between DNA, chromosomes, genes, and alleles
  + Nucleic acids & nucleotides – structure and relationship
  + Complementary base pairs
  + DNA vs. RNA
* Protein Synthesis
  + Transcription – purpose & process
  + Translation – purpose & process
  + Mutations – types & impacts