Chapter 12, 13 & 14 Test: What to know
Biology - Landis

Chapter 12-1 → 12-4, 13-1, 13-4, 14-3

- Structure of DNA
  - Components
  - Nucleotides
  - Bases and base-pair bonding rules
  - Chargaff's rule and base-pairing
  - Pyrimidines & purines
  - Geometric shape of DNA molecule
- Process of DNA replication
- Location of DNA in prokaryotes & in eukaryotes
- RNA – structure
  - Differences between RNA and DNA
  - 3 different types of RNA and their functions
- "Central dogma" – DNA makes RNA makes protein
  - Process of transcription – location, how it happens, what molecule is produced?
  - Process of translation
    - Location
    - What molecules are involved
    - What is produced (what is a polypeptide?)
    - Genetic code – codons, anti-codons, how to read the Genetic Code wheel
- Mutations
  - Definition
  - Point mutations – deletions, insertions, substitutions
  - Frameshift mutations – which kind of mutations are frameshift mutations, what are the results of a frameshift mutation compared with the results of a non-frameshift mutation?
  - Chromosomal mutations – deletion, duplication, inversion, translocation
- Changing the living world
  - Selective breeding, hybridization, inbreeding, increasing variation
- Genetic engineering
  - Definition
  - Transgenic organisms
    - Recombinant DNA - definition
    - How they're made,
    - Advantages of transgenic plants
  - Cloning – how it's done, results of cloning
- DNA fingerprinting – basis for using as an identifier
- Human Genome Project – what is it
- Gene therapy - purpose