

## DNA & RNA: Chapter 13, 14, 15, 16 Test Questions: What to know

### Biology A

What's covered: Chapter 13.1 – 13.3, 14.1 – 14.4, 15.3, 16.1 – 16.4

- 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 control of development
  - Hox genes
- Gene regulation
  - Transcription factors
- Epigenetics
- Genetic engineering
  - Definition
  - Restriction enzymes
  - Transgenic organisms
    - Recombinant DNA - definition
    - How they're made
  - Cloning
    - Clone – definition
    - Results of cloning
  - CRISPR technology
    - Advantage over recombinant DNA technology