

KEY

CHAPTER 10 REVIEW

Describe DNA's structure and composition...

- Double stranded
- deoxyribose is sugar in backbone
- Nitrogen bases: A, C, T, G NO U

Describe RNA's structure and composition...

- Single stranded
- ribose is sugar in backbone
- Nitrogen bases A, C, U, G NO T

What did the following experiments/individuals contribute to our knowledge of DNA?

- Griffith and Bacterial Transformation: harmless (non virulent) could acquire virulent traits by incorporating DNA from other bacteria... showed a molecular basis to ^{genetic} inheritance
- Hershey-Chase "Blender" experiment: used radioactive isotopes to determine that DNA (not protein) is the genetic material
- Chargaff: showed that amount of A and T were equal and C and G were equal
- Rosalind Franklin: X-ray photographs of DNA ... provided information about DNA's molecular shape and dimensions ... both necessary to build a model
- James Watson/Francis Crick:

USE THE FOLLOWING CHART TO SUMMARIZE THE FOLLOWING PROCESSES RELATED TO DNA'S FUNCTIONS AS THE GENETIC MATERIAL

	REPLICATION	TRANSCRIPTION	TRANSLATION
WHAT? What is this process? What is its' end product?	Copying of DNA "parent" into two "daughter" DNA molecules	Information in DNA is copied to a molecule of mRNA	The process of using mRNA to create a protein (sequence of amino acids)
WHERE? Where does this process occur? Why would this process occur in this location?	nucleus - DNA remains in nucleus (in Eukaryotes)	in nucleus... DNA remains in nucleus mRNA then goes to cytoplasm	cytoplasm in combination with a ribosome and tRNAs
HOW? How does this process occur? Which enzymes/cellular structures are involved?	helicase - unzips DNA double helix exposing base pairs DNA polymerase - builds missing strands in 5' → 3' direction (creates leading and lagging strands) Ligase - ties ends of DNA segments together	→ Same RNA polymerase creates mRNA molecule which is complementary to one of the original DNA strands	Ribosome coordinates to movement and interactions of mRNA and tRNA's bearing specific amino acids Amino acids are assembled into a protein in the sequence specified by the codons on mRNA.