13.1 - RNA - Ribonucleic acid

**Structure**
- Similar structure to __________
  - Chains of nucleotides

- Three primary differences between DNA and RNA:
  - RNA is usually ______________-, while DNA is double-stranded
  - RNA contains the sugar __________, instead of Deoxyribose found in DNA
  - RNA contains the nucleotide __________, while DNA contains Thymine
    - __________ replaces thymine in RNA, so Adenine bonds with __________ (A-U)

- Three types of RNA molecules:
  - ________________ (mRNA) - Serves as messenger to carry DNA’s message out of the __________
    - DNA can __________ leave the nucleus
  - ________________ (tRNA) - small folded molecule that carries the __________ that will be used to make __________ during gene expression
  - ________________ (rRNA) - makes up the __________, where proteins are made

13.2-13.3 - Gene Expression: Transcription and Translation

- Gene - section of ______ that controls a specific ______________

- Gene expression - the process of using the instructions in _____ to produce a ______________
  - Each gene holds the instructions to build a ______________ - there are millions!
    - The proteins then perform specific ______________ that determine certain ______ (hair color, eye color, etc.)

- Two steps of gene expression:
  - Transcription - copying the _______ sequence into a molecule of _______ (DNA → RNA)
  - Translation - the code in the _______ molecule is used as instructions to build a _______ (RNA → Protein)

- The Central Dogma of biology: ____________________________
Transcription
- Transcribe means ________________

- A copy of the DNA gene is being made into a molecule of RNA, so that it can leave the _______ and enter the ______________________ where the proteins will be made

- The main product after transcription will be an ________________

Steps in Transcription
- The enzyme called ____________________ bonds to the DNA molecule
  - Bonds at the ________________ region, which marks the beginning of the gene, where ________________ starts
  - DNA ____________ and the strands separate

- RNA polymerase moves down one of the DNA strands (not both) and builds a ________________ mRNA molecule on top
  - RNA ________________ bond to their _________________________ DNA nucleotides

- RNA polymerase continues building the __________ on the DNA strand until it reaches the _______________________, which marks the end of the gene

- Transcription will ______ and the RNA polymerase __________ the DNA and mRNA molecules
  - DNA ____________ up again
  - mRNA molecule will leave the __________ to get ready for translation in the ___________