

AP BIOLOGY DNA POSTER PROJECT

Modeling DNA Replication:

1. Cut out enough DNA nucleotides to make a strand 18 base **pairs** in length.
2. Assemble the DNA sequence, start with ATG on the 5' - 3' strand, and end with either TGA, TAA, or TAG. Also make sure these stop codons do not appear *within* your strand.
3. Use the figure on page 317 of your book to help you model the process of DNA Replication. Label the following: **Primer** (this is RNA!!!), **Helicase**, **DNA Polymerase (III)**, **Leading Strand**, **Lagging Strand/Okazaki Fragments**, **Ligase**, **Free-floating dNTPs**

Modeling Transcription:

1. Assemble an *exact copy* of the original 3' - 5' sequence of the lagging strand on a new poster, at the top. Leave some space in front of it.
2. Add a **promoter** to your 3' - 5' strand. It should be at least 6 nucleotides long and include the **TATA Box** (or an abbreviation of it).
3. Create (or draw) an **RNA polymerase** molecule and add it to your strand.
4. Create the strand of *mRNA* (use correct nucleotides!) that the polymerase just made. Glue it down near the middle of your poster.
5. Label at least one **intron** (3bp) and the **exons**; add a **spliceosome** and *write* the sequence (letters only, no cutouts) of your spliced RNA at the bottom of your poster.

Modeling Translation:

1. On your written mRNA, add a **ribosome** somewhere near the middle.
2. Label the sites of the ribosome (**E**, **P**, and **A**).
3. Draw/cutout **tRNA molecules** and show the **anticodon** as well as the **amino acid**.
4. Label the **start** and **stop** codon.
5. Finally, write the entire **primary sequence** of the protein that would result from your mRNA. Use the genetic code on page 330 of your book.
6. CONGRATULATIONS, YOU'RE DONE!!! Hopefully you have now mastered the processes of DNA replication and protein synthesis.