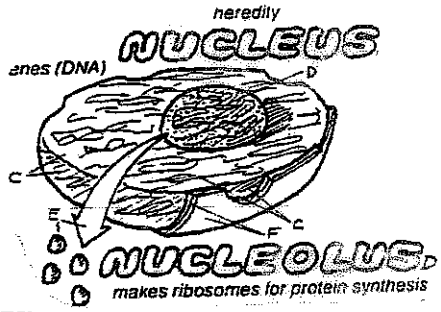
CH 3 Lecture 3

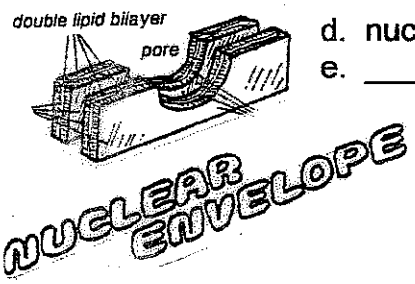
THE CELL



OBJECTIVE#6 Explain the functions of the cell nucleus..
OBJECTIVE#7 Summarize the process of protein synthesis.

D. Structure of the _____ **(Figure 3.16 page 78)**

1. Definition: cellular organelle that contains _____
2. Function: _____ for cellular activity
3. Structure
   a. _____: dense region in nucleus that represents the site of _____
   b. nuclear _____ : double _____ surrounding the nucleus
   c. nucleoplasm : fluid contents of nucleus containing ions, enzymes, RNA & DNA nucleotides, proteins, and small amounts of RNA & DNA



   d. nuclear _____ : permit movement of material btw nucleus and cytosol
   e. _____:
      1) dense structures composed of tightly coiled _____ strands
      2) associated w/ _____ (special protein that guards the activity of each gene);
      3) _____ in the nucleus when a cell prepares to undergo _____ ;
      4) human cells contain _____
   f. _____ loosely coiled tangle of _____ in a cell _____ that condenses in a dividing cell

4. Information Storage
   a. _____:
      1) chemical language (_____) of cell to construct proteins
      2) single DNA molecule is _____, _____ bonds btw complementary _____
      3) info in sequence of bases (_____) in _____ for amino acid ; example: _____
   b. _____:
      1) functional unit of heredity
      2) has all _____ needed to produce specific proteins or tRNA or rRNA
      3) _____ : special region of DNA for regulating gene activity; says "do or not read this message or "read me" or "message starts or stops here"

5. Protein Synthesis
   a. Since ribosomes are located in the cytoplasm and genes are in the nucleus, there must be communication btw the two.
   b. _____ **(Figure 3.18 page 80)**
      1) definition: _____
         _____

2) mRNA = _____ RNA is a transcript (_____) of info in the gene
3) _____binds to promoter of gene synthesizing mRNA strand
4) RNA bases: A,C,G, and _____
5) _____ : sequence of 3 N- bases along an mRNA strand that will specify the _____ in a peptide chain **(Table 3-4 page 81)**

c. _____ **(Figure 3.19 page 82)**

1) definition: _____

2) _____ when synthesized _____ nucleus and binds w/ a ribosome in cytoplasm
3) tRNA = _____ RNA _____ to be used by ribosome to assemble protein
4) more than 20 types of tRNA
5) _____: triplet of N-bases on a tRNA molecule that interacts w/ an appropriate codon on a strand of mRNA
6) takes about 20 seconds to produce a typical protein

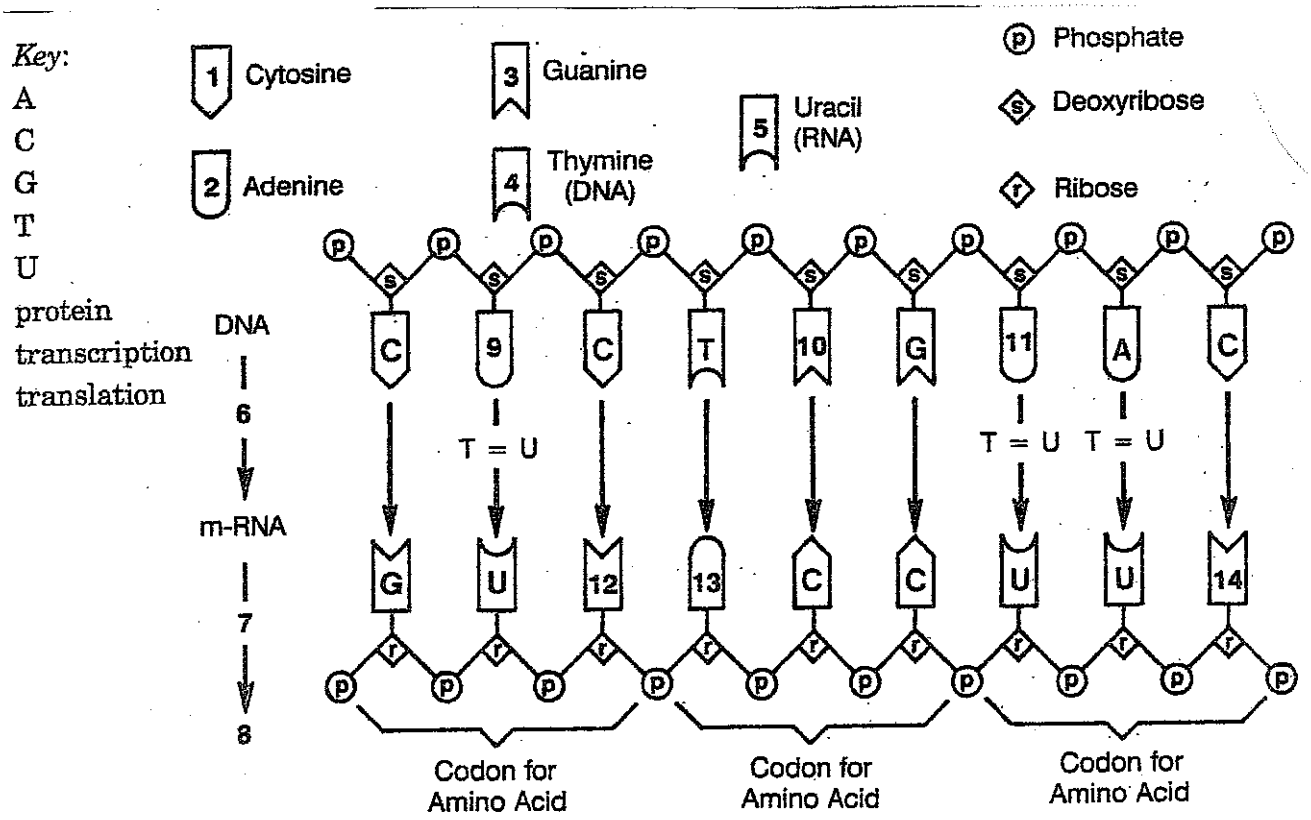


Figure 2.3 Transcription from one DNA strand to m-RNA showing codons that specify amino acids. Phosphates connect ribose molecules. Abbreviations: A, adenine; T, thymine; G, guanine; C, cytosine; R, ribose sugar; U, uracil; P, phosphate radicals.