

RNA Ribonucleic Acid  
 "DNA messenger & taxi"

II. RNA Structure & Function

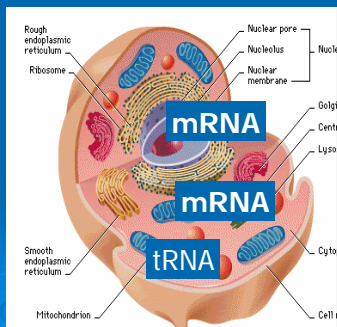
A. What is RNA?

1. Organic Molecule
2. Nucleic Acid
3. *mRNA*= messenger  
*tRNA*= transfer

R  
I  
B  
O  
N  
U  
C  
L  
E  
I  
C  
A  
C  
I  
D

B. Where is RNA located?

1. *mRNA* in nucleus & cytoplasm
2. *tRNA* only in cytoplasm



B. What is RNA's structure?

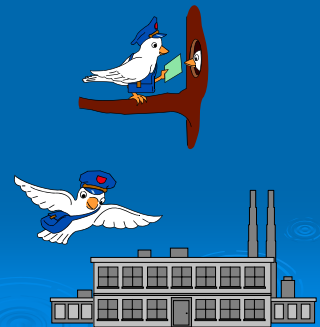
- > Acid
  - > Sugar-Base
  - > Acid
  - > Sugar-Base
  - > Acid
  - > Sugar-Base
  - > Acid
  - > Sugar-Base
1. *Nucleotides*=
    - a. Phosphoric Acid
    - b. Ribose sugar
    - c. Nitrogenous Bases:  
Adenine-Uracil  
Guanine-Cytocine
  2. *Single Strand*
  3. No Twisted helix

Comparison of RNA & DNA:

> Acid	◆ Acid	Acid
> Sugar- <u>Uracil</u>	◆ Sugar <u>Thymine</u>	Sugar
> Acid	◆ Acid	Acid
> Sugar-Base	◆ Sugar-Base-Sugar	
> Acid	◆ Acid	Acid
> Sugar-Base	◆ <u>Deoxy-ribose</u> -Base-Sugar	
> Acid	◆ Acid	Acid
> <u>Ribose</u> -Base	◆ Acid	Acid
<b>RNA</b>	<b>DNA Ladder</b>	

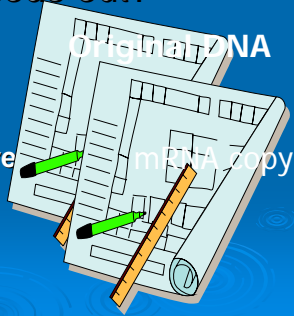
D. What are RNA's functions:

1. *mRNA*=
- > Copies the DNA code
- > Delivers message to Ribosome
- > Protein Factories



## Why not send the original DNA code out?

- DNA might be damaged!
- mRNA components are reused
- To copy more messages



## RNA function cont.



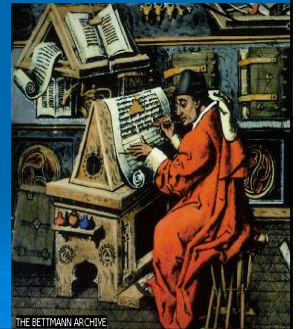
2. tRNA:
  - in cytoplasm
  - Picks up an amino acid
  - “Taxis” the aa to the Ribosome protein factories

## III. Protein Synthesis

Assembling Proteins from the DNA Instructions

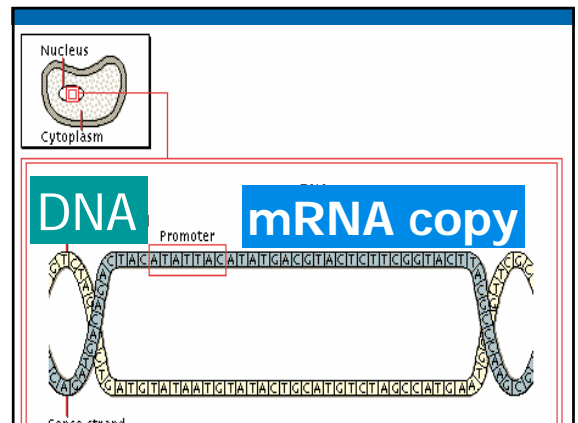
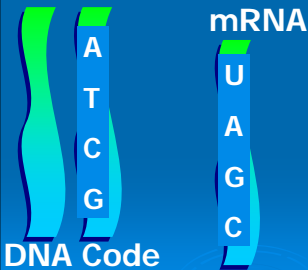
## A. Transcription:

1. mRNA is copied off of DNA
2. In nucleus
3. Steps:
  - DNA untwists
  - DNA unzips
  - RNA codons line up



## Transcription: mRNA has:

- Ribose sugar
- Uracil instead of thymine bases
- Nuclear membrane allows it to leave!



## B. Translation =



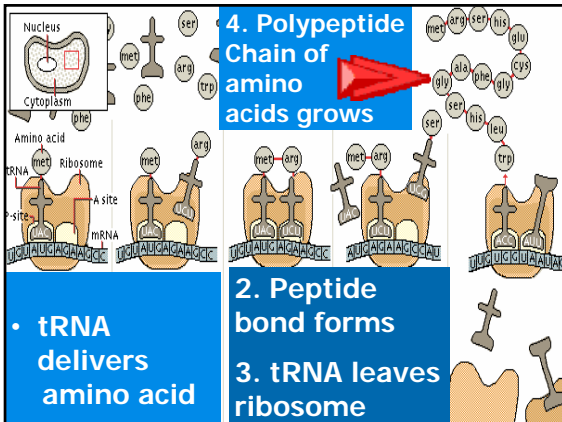
- Conversion of the message (mRNA Code)
- Into a protein
- By the ribosome factories

## B. Translation

1. mRNA arrives at the Ribosome
2. tRNA picks up an amino acid
3. tRNA delivers the aa to the ribosome
4. aa are assembled into polypeptide proteins



mRNA code



## Summary

- Protein Synthesis:
1. Transcription:
    - Make mRNA
    - From DNA
  2. Translation:
    - Make protein
    - Off mRNA code
    - Using amino acids

## DNA Replication:

- Make duplicate DNA
- In nucleus
- Copy the chromosomes
- For Mitosis