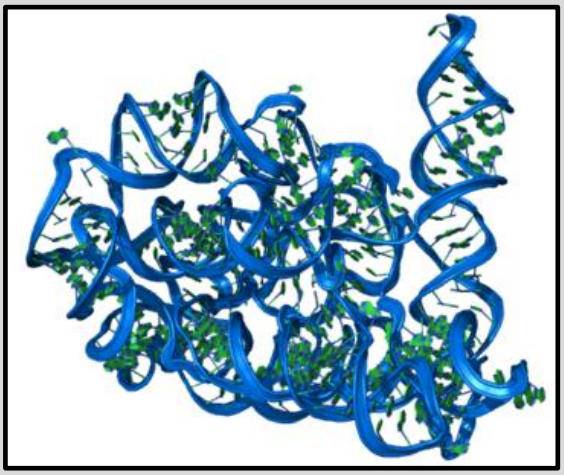
REVIEW: DNA and Protein Synthesis

There are MORE GENES than CHROMOSOMES

Nucleic Acid

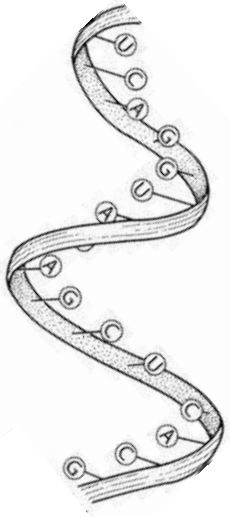
- ✓ *DNA* and *RNA*
- ✓ made of…..

Hydrogen **O**xygen **C**arbon **N**itrogen **P**hosphorus



***DNA* is *DOUBLE* stranded**

***RNA* is a *SINGLE* strand**

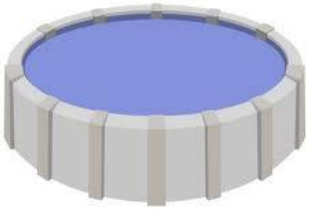


Nucleotides

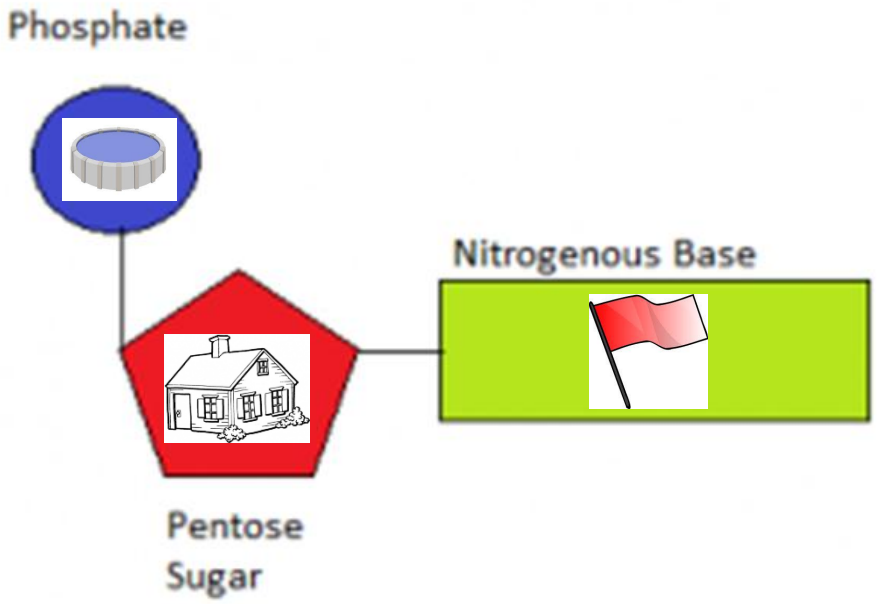
- ✓ *BUILDING BLOCKS* of *nucleic acids*
- ✓ Need them to *BUILD DNA and RNA*
- ✓ *Made of*

SUGAR
"the house"

PHOSPHATE GROUP
"the pool"



NITROGENOUS BASE
"the flag"

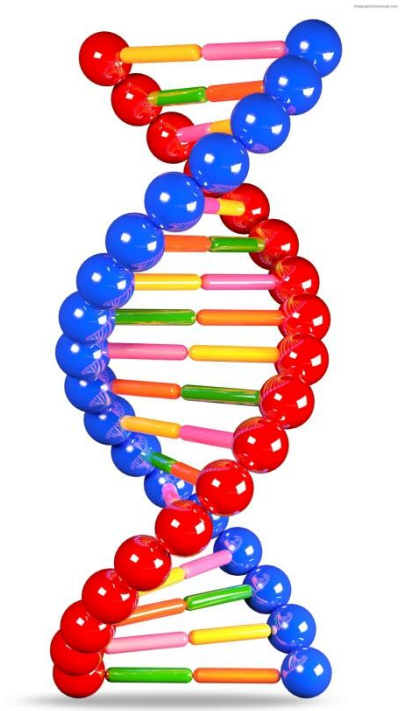


Watson & Crick

- ✓ *Scientists* at CSH Laboratory
- ✓ In 1953 they *discovered the DOUBLE HELIX*
- ✓ Won the Nobel Prize

DNA

- ✓ *Double Stranded*
- ✓ Made of *NUCLEOTIDES*
- ✓ The *"TWISTED LADDER"*
- ✓ *TEMPLATE* to build *proteins*
- ✓ Found *in the NUCLEUS*

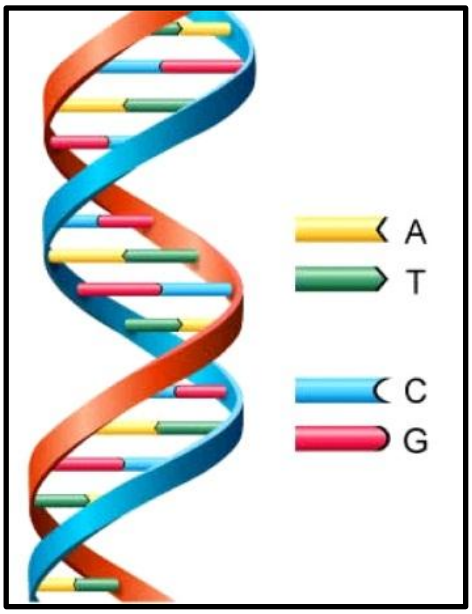


In *DNA*…..the *SUGAR is DEOXYRIBOSE*
(it's *missing an OXYGEN*!)

Nitrogenous Bases

A *Adenine* **T** *Thymine*

G *Guanine* **C** *Cytosine*



- ✓ Make up the *INSIDE OF THE LADDER*
- ✓ The *SEQUENCE makes up DNA CODES*
- ✓ *Nitrogenous Bases **ARE** molecular bases*

Types of RNA

Messenger RNA (***mRNA***)

- *carries DNA's information* to the *ribosome.*

Ribosomal RNA (***rRNA***)

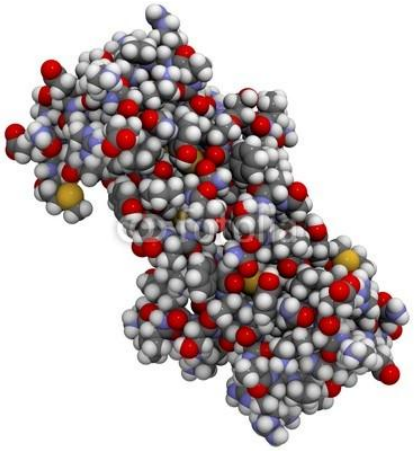
- *makes* the ribosome *a protein factory*

Transport RNA (***tRNA***)

- *carries amino acids to* the *ribosome* to *build protein*

To BUILD a PROTEIN you need…..

1. **place** → **RIBOSOME**
2. **materials** → **AMINO ACIDS**
3. **instructions** → **DNA**



Steps to *PROTEIN Synthesis*

1. *DNA "unzips"*
2. *Transcription*
   - *DNA's code* is written *in the language of RNA*
   - done *by mRNA*
3. *Translation*
   - *tRNA translates mRNA codon* into Amino Acids
   - by *matching the anticodon*