

### 3 DNA

#### What You'll Learn:

Identify the parts of DNA and its structure.

Explain how DNA copies itself.

Describe the structure and function of each kind of RNA.

### What is DNA?

A cell uses a code in its hereditary material. The code is a chemical called deoxyribonucleic acid, or DNA.



**\*It contains info for growth and function.**

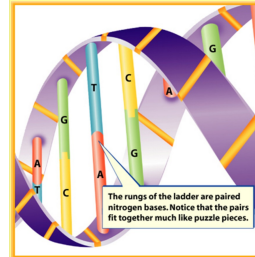
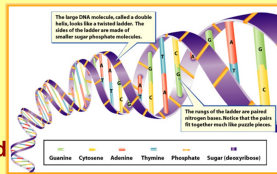
**\*It is stored in the nucleus, and every cell in the body has identical DNA**

### A DNA Model

**\*DNA looks like a twisted ladder.**

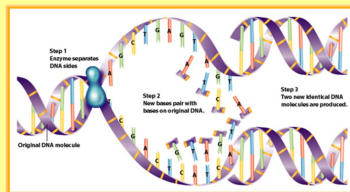
**\*Each side is made of sugar and phosphate.**

**\*The rungs are made of the nitrogen bases adenine (A), thymine (T), guanine (G), and cytosine (C).**



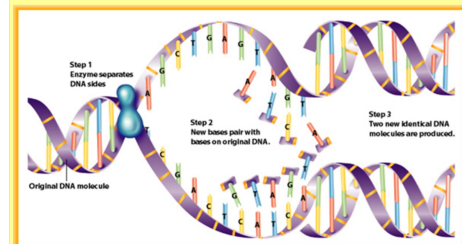
**\*Adenine always pairs with thymine, and guanine always pairs with cytosine.**

### Copying DNA



**\*The two sides unwind and separate.**

**\*The bases fill in the missing code. The result is an exact copy of the original DNA**



### Genes

**\*Most of your characteristics depend on the kinds of proteins your cells make.**

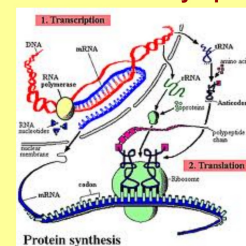
**\*DNA stores those instructions.**

**\*Proteins are made of chains of amino acids.**

**\*Changing the order of the amino acids changes the protein that is being made.**

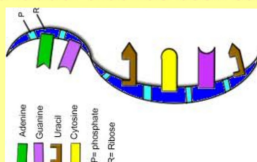
### Making Proteins

**\*Genes are found in the nucleus, but proteins are made in the cytoplasm.**



### Ribonucleic Acid

**\*RNA is a ladder that has been sawed in half.**



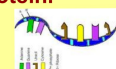
**\*It uses the bases A, U (uracil instead of thymine), G, and C.**

**\*3 kinds of RNA:**

**1. messenger RNA (mRNA) carries the info from nucleus to the ribosome. It has the instructions for making the protein.**

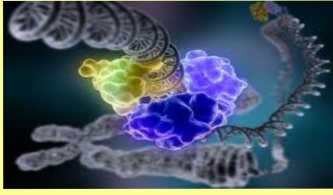
**2. transport RNA (tRNA) brings amino acids to the ribosome to create the protein.**

**3. ribosomal RNA (rRNA) chemically bonds the amino acids to make the protein. Ribosomes are made of rRNA.**



### Controlling Genes

\*Each cell uses only the genes that make the proteins that it needs.



### Mutations

\*Without correctly coded proteins an organism can't grow, repair, or maintain itself.

\*Mutations can cause death, have no effect, or be beneficial.

