# History and Structure of DNA

### **Connections**

- Know the scientists and their contributions to the structure of DNA.
- Sketch and label the parts of a strand of DNA using the base pairing rule.
- Understand what semiconservative replication means.

### What is DNA?

- DNA is \_\_\_\_\_
- It is located in the \_\_\_\_\_ of the cell.
- It is the instructions for making the \_\_\_\_\_\_ that allow our bodies to function.
  - Remember: Proteins help regulate cellular \_\_\_\_\_.

### <u>History</u>

- The relation between nucleic acids and \_\_\_\_\_\_ was discovered by Oswald \_\_\_\_\_\_ and his team of scientist in 1944.
  - He was able to transfer the ability to cause disease from one strain of bacteria to another by transferring the \_\_\_\_\_ (nucleic acid).
  - This proved that \_\_\_\_\_ were made up of \_\_\_\_\_.
- Rosalind Franklin used \_\_\_\_\_\_\_ to try and understand the physical structure of the DNA molecule.
- The resulting "photograph" helped reveal the \_\_\_\_\_\_ structure of DNA.
- \_\_\_\_\_ and \_\_\_\_\_ developed the correct model of DNA using Rosalind's photograph and other scientists' research on DNA.

### **Parts of DNA**

DNA can be broken down into several parts or categories.

- Organisms are made up of \_\_\_\_\_\_.
- Chromosomes are made up of several \_\_\_\_\_\_.
- Genes are made up of segments of \_\_\_\_\_.
- DNA is made of several \_\_\_\_\_\_.
- Each nucleotide is made of a \_\_\_\_\_, a







### **Structure of DNA**

- The shape of DNA is a .
  - A double helix resembles a twisted ladder.
- It has parts: ٠
  - The \_\_\_\_\_ backbone the sides of the ladder
  - A nitrogen \_\_\_\_\_ pair rungs/steps of the ladder

### Nitrogen Bases

- There are categories of nitrogen base:
- Pyrimidines and Purines

There are nitrogen bases:

- Pyrimidines:
  - 0
  - 0
- Purines: •
  - 0
  - 0

## <u>Base Pairing</u> Rule



Erwin \_\_\_\_\_ discovered that the amount of \_\_\_\_\_\_ always \_\_\_\_\_

the amount of thymine and the same is seen for guanine and .

- From this, Watson and Crick determined that
  - o \_\_\_\_\_ pairs with \_\_\_\_\_

 $\circ$  pairs with

### Labeled DNA Sketch

### **DNA Replication**

DNA must be \_\_\_\_\_\_ (copied) before cell division (\_\_\_\_\_\_\_ or
) to ensure each daughter cell has the correct amount of DNA.

### **Duplication - Overview**

- The DNA molecule \_\_\_\_\_\_ in half then produces \_\_\_\_\_\_ strands by using the original strand as a template (or model) for the new strands.
- DNA Replication is \_\_\_\_\_\_
  - Both strands are composed of one "\_\_\_\_\_" side and one "\_\_\_\_\_" side.

### <u> Replication – Step 1</u>

An \_\_\_\_\_, DNA Helicase, \_\_\_\_\_\_ the DNA strand by breaking the hydrogen
between nitrogen .



### <u> Replication – Step 2</u>

- Each side serves as a template for the attachment of \_\_\_\_\_\_, which are added by an \_\_\_\_\_\_ called DNA polymerase.
  - Follows\_



### <u> Replication – Result</u>

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