



## **Molecular Biology: Practice Activity**

**Directions:** Fill in the blanks.

Gregor \_\_\_\_\_:

- \_\_\_\_\_ was the father of genetics
- He studied heredity in \_\_\_\_\_ because:
  - They grew fast
  - Had many \_\_\_\_\_
  - They were small
- Heredity is how \_\_\_\_\_ information is transferred to offspring

### **Chromosome:**

- Located in the \_\_\_\_\_
- DNA is wrapped around the protein \_\_\_\_\_

### **Monomers:**

- A building block
- Carbohydrate's monomers is \_\_\_\_\_
- Building block of nucleic acid is \_\_\_\_\_
- Protein's monomer is \_\_\_\_\_ acid
- Two types of nucleic acid:
  - DNA
  - \_\_\_\_\_

### **Evidence for DNA:**

- A vaccine is made from \_\_\_\_\_ or weakened bacteria
- You are given the vaccine and you are ready for the live version
- Virulent (\_\_\_\_\_): a substance that causes disease or death
- \_\_\_\_\_ is the only organism that can perform transformation
- \_\_\_\_\_ information is transferred through DNA
- \_\_\_\_\_ is a virus that infects bacteria



### **Chagraff's Puzzle:**

- \_\_\_\_\_ pairs
  - A - T, C - G, T - A, G - C, T - A, C - G
- Pyrimidines = \_\_\_\_\_ and Thymine
- \_\_\_\_\_ = Adenine and Guanine

### **Watson and Crick:**

- Two men that built the first model of **DNA**
- They won the Nobel Prize
- Some scientists say that \_\_\_\_\_, who was the first person to take a picture of DNA, using an X-ray, should have won the Nobel Prize.

### **Nucleotide:**

- Made up of three things:
  - A nitrogenous base (a nucleobase)
  - \_\_\_\_\_ (ribose or deoxyribose)
  - A phosphate group (1-3 phosphates)
- Four \_\_\_\_\_ bases:
  - Adenine (A)
  - Cytosine (C)
  - Guanine (G)
  - Thymine (T)

### **DNA structure:**

- The \_\_\_\_\_ of DNA is made up of:
  - Phosphate groups
  - Sugar groups
- The rings consist of one \_\_\_\_\_ and four \_\_\_\_\_
  - The fifth carbon atom is attracted to the fourth carbon of the ring
- The bases are two of the \_\_\_\_\_ nitrogenous bases:
  - Adenine (A)
  - Cytosine (C)
  - \_\_\_\_\_
  - \_\_\_\_\_



## Answers

### Gregor Mendel:

- **Mendel** was the father of genetics
- He studied heredity in **peas** because:
  - They grew fast
  - Had many **varieties**
  - They were small
- Heredity is how **genetic** information is transferred to offspring

### Chromosome:

- Located in the **nucleus**
- DNA is wrapped around the protein **histones**

### Monomers:

- A building block
- Carbohydrate's monomers is **monosaccharide**
- Building block of nucleic acid is **nucleotide**
- Protein's monomer is **amino** acid
- Two types of nucleic acid:
  - DNA
  - **RNA**

### Evidence for DNA:

- A vaccine is made from **dead** or weakened bacteria
- You are given the vaccine and you are ready for the live version
- Virulent (**pathogen**): a substance that causes disease or death
- **Bacteria** is the only organism that can perform transformation
- **Genetic** information is transferred through DNA
- **Bacteriophage** is a virus that infects bacteria

### Chagraff's Puzzle:

- **Complementary** pairs



- A - T, C - G, T - A, G - C, T - A, C - G
- Pyrimidines = **Cytosine** and Thymine
- **Purine** = Adenine and Guanine

### Watson and Crick:

- Two men that built the first model of **DNA**
- They won the Nobel Prize
- Some scientists say that **Rosalind Franklin**, who was the first person to take a picture of DNA, using an X-ray, should have won the Nobel Prize

### Nucleotide:

- Made up of three things:
  - A nitrogenous base (a nucleobase)
  - **A five carbon sugar** (ribose or deoxyribose)
  - A phosphate group (1-3 phosphates)
- Four **nitrogenous** bases:
  - Adenine (A)
  - Cytosine (C)
  - Guanine (G)
  - Thymine (T)

### DNA structure:

- The **backbone** of DNA is made up of:
  - Phosphate groups
  - Sugar groups
- The rings consist of one **oxygen** and four **carbons**
  - The fifth carbon atom is attracted to the fourth carbon of the ring
- The bases are two of the **four** nitrogenous bases:
  - Adenine (A)
  - Cytosine (C)
  - **Guanine (G)**
  - **Thymine (T)**