



## **Molecular Biology: Notes**

### **In this lesson...**

- Gregor Mendel
- Chromosome
- Monomers
- Evidence for DNA
- Chagraff's Puzzle
- Watson and Crick
- Nucleotide
- DNA structure

### **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)