**GENETIC DETERMINERS**

All living organisms reproduce only offsprings like themselves. Cow, elephant, mango, human being, for example, will only can give birth cow, elephant, mango and human being respectively. The offsprings of all the organisms resemble their parents in several respects. This phenomenon of transmission of characteristics from their parents to their offsprings is known as **heredity.** Heredity refers to the sum total of biological processes by which this transmission occurs. The offsprings and parents differ from each in several respects which is known as **variation**. Study of heredity and variation in biological science is termed as **Genetics** (Gk. to generate), the term was first proposed by **William Bateson** in 1902. **Friederich Meischer**, a 22 year old Swiss physician and chemist, in 1869 isolated a previously unknown substance from the nucleus of pus cell. He named it ‘**nuclein’. Zacharias**, in the year 1881, identified the nuclein with chromatin. **Hertwig**, for the first time, in the year 1884, made it highly probable that nuclein was the biochemical compound responsible for the transmission of genetic information. The nuclein was found to be acidic in nature and **Altmann** in the year 1899 termed as nucleic acid. There are two types of nucleic acid – deoxyribonucleic acid (DNA) and ribonucleic acid (RNA). Later on from the works of F. Griffith (1928), Casperson and Brachel; Avery, Macleod, and McCarty (1944); Hershey and Chase (1952); Fraenkel and Conrat (1955) etc proved nucleic as the genetic material. Nucleic acids

The genetic determiners or units of hereditary traits was termed as **‘genes’** by Johansen in the year 1909. Genes are functional fragments of DNA molecules. DNA molecules are found in the nucleus of the cell as a supercoiled darkly stained coloured body the chromosome (W. Fleming 1879 and W. Waldeyer 1888). Morgan (1914) from work on fruit fly *Drosophila melanogaster* proposed the gene theory. The theory states that chromosomes are the bearers of genes and several genes are present in each chromosomes in a linear fashion and specific order. The genetic material is similar in higher and lower organisms. Most of the knowledge on the structure and function of gene comes from the study on Fungi, Bacteria and Viruses.