**UNIT 1: ANTHROPOLOGIST INTEREST IN STUDYING HUMAN GENETICS**

The science of genetics is an important discipline which deals with hereditary and variation. The term genetics came from Greek root word ‘gen’ meaning ‘to generate ‘or ‘to grow’ or ‘to become something’. The term was first coined by William Bateson in 1905. The science of genetics generally deals with the study of inherited characteristics while hereditary is the process that determines the capacity of individuals to grow and develop as a result of interaction between inherited traits and environmental factors. Thus, study of heredity throw sufficient light to understand the origin of man and significance of races, while genetic study can help to investigates the mechanism of heredity and unveils the internal features of human evolution.

Anthropology, more particularly physical anthropology deals basically human evolution and human variation. It tries to seek answers related to how, why and when human evolution and variation occurred? Traditionally physical anthropologists seek to find answers by interpreting fossil forms of earlier primates. It also tries to make comparative anatomical and morphological study of primates. But, to understand the basic cause of evolution and variation, mere anatomical and skeletal discoveries and comparison between different forms of primate is not enough.

With the development of genetics, the anthropologists are trying seriously to understand the causes of human evolution and variation from genetical point of view, besides interpreting fossil evidences. Though it is very difficult to make human beings a laboratory specimen for genetical studies, study of different living forms and constant efforts of geneticist paved the way for the solution also. Modern genetical study has clearly revealed different latent facts of evolution and variation. Chromosomal study, DNA analysis, gene mapping, serological study, etc which are under the purview of genetics has thrown new light in understanding the evolutionary line of human beings.

The causes and the mechanism of human variation cannot be studied without the knowledge of human genetics. The variations of the character or traits are due to the variation in the gene or genes. Therefore, structural and functional study of genes can only help in understanding human variation. Discovery of Mendel’s Laws etc have thrown much light to solve the mysteries of human evolution and variation. Population genetics which is a specialized field of human genetics deals with the operation of heredity in the natural variable population of freely inbreeding individuals. Gene flow, genetic drift, isolation, inbreeding, etc. are the variables of population genetics and these variables are the chief mechanism of human variation. Serological studies like ABO blood group like ABO blood group study, dermatoglyphic study, skin colour study are now days extensively used as a racial criteria for racial classification. Genetical analysis of these traits has contributed anthropology in more than one ways. Besides studying human variation, these traits have help human being in different fields like, Forensic science, medico-legal problems, etc.

Study of abnormal hereditary traits of human beings is also within the purview of physical anthropology. Different hereditary traits like colour blindness, haemophilia, albinism, etc. can be studied with the help of the knowledge og genetics. Other abnormal traits like Down syndrome, Klinefelter syndrome, etc. which occurs due to chromosomal non-disjunction may cause change in genetic variation. Study of various chromosomal abnormalities, sex-linked, sex-limited, and sex-controlled traits, single/multiple factor inheritance are some of the common area of interest for both geneticist and anthropologists.

Now a day the knowledge of human genetics does not satisfied our desire to know about human evolution and variation. The knowledge of genetics is now widely applied to understand the inheritance of various genetical diseases. Eugenics, which is associated with the improvement of human race by altering the genetic make of human beings, has become an important area of study for anthropologists. In this way, there are many more areas of study for anthropologists which require the knowledge of human genetics. But to discuss all those within short stipulated period of time is not possible. However, from the above discussion, we can understand the reason behind the interest of anthropologists in human genetics.