

LEARNING OBJECTIVES: To enable the students to

- Develop skill in the usage of laboratory microscope
- Gain Hands-on experience of different phases of cell division by experimentation
- Develop skills on human karyotyping and identification of chromosomal disorders
- Apply the basic concept of inheritance for applied research
- Be familiar with phylogeny and geological history of origin & evolution of animals.

COURSE OUTCOMES: By the end of the course, students will be able to

- CO1. Examine and differentiate various types of cells and their structure.
- CO2. Observe the various stages of mitotic divisions by using microscopy technique.
- CO3. Solve various genetic problems related to sex-linked inheritance and blood grouping.
- CO4. Identify and summarise chromosomal abnormalities
- CO5. Compare and contrast homologous and analogous organs with reference to their evolutionary origin.

I. CELL BIOLOGY:

1. Preparation of temporary slides of Mitotic divisions with onion root tips
2. Observation of various stages of Mitosis and Meiosis with prepared slides
3. Mounting of salivary gland chromosomes of Chironomus

II. GENETICS:

1. Study of Mendelian inheritance using suitable examples and problems
2. Problems on blood group inheritance and sex linked inheritance
3. Study of human abnormal karyo types (Down's syndrome, Edwards, syndrome, Patau syndrome, Turner's syndrome and Klinefelter syndrome)

III. EVOLUTION:

1. Study of fossil evidences
2. Study of homology and analogy from suitable specimens and pictures
3. Evolution of Man with pictures
4. Phylogeny of horse with pictures
5. Study of Genetic Drift by using examples of Darwin's finches (pictures)
6. Visit to any Zoological Museum/park /sanctuary and submission of report.

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3. Harth and Jones EW. 1998. Genetics – Principles and Analysis. Jones and Barlett Publ. Boston.
4. Levine L. 1969. Biology of the Gene. Toppan.
5. Pedder IJ. 1972. Genetics as a Basic Guide. W. Norton & Company, Inc.
6. Rastogi VB. 1991. A Text Book of Genetics. Kedar Nath Ram Nath Publications, Meerut, Uttar Pradesh, India.
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8. Stahl FW. 1965. Mechanics of Inheritance. Prentice-Hall.
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