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01/08/18  
Haw.  
Human Genetics  
(24)

## HUMAN GENETICS Semester III (CBCS)

Core Course Title : Molecular Biology

Code: DSC- HG-16-301

### UNIT I: BIOMOLECULES

- 1.1. Carbohydrates: Monosaccharides, Di-saccharides, Polysaccharides, reducing and non-reducing sugars.
- 1.2. Amino acids: Chemical nature and classification, Protein structure- Hierarchy.
- 1.3. Lipids: Fatty acids, Triglycerides, Steroids.
- 1.4. Nucleotides.

### UNIT II: NUCLEIC ACIDS

- 2.1. Nature of Genetic Material: Experimental basis
- 2.2. DNA Structure- Watson Crick Model.
- 2.3. Genetic Material: Organization in Viral, Prokaryotic and Eukaryotic.
- 2.4. RNA Structure: rRNA, mRNA, tRNA and Interference RNA

### UNIT III: DNA REPLICATION

- 3.1. Semi- conservative replication – Experimental basis
- 3.2. Mechanism of replication in Prokaryotes.
- 3.3. Mechanism of replication in Eukaryotes.
- 3.4. Replication Errors

### UNIT IV: TRANSCRIPTION

- 4.1. Transcription in Prokaryotes
- 4.2. Reverse Transcription
- 4.3. Transcription in Eukaryotes
- 4.4. Post Transcriptional modification

MAHESH  
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Zoology



## LABORATORY WORK

1. Qualitative tests of Biomolecules
  - i. Sugars
  - ii. Lipids
  - iii. Proteins.
2. Protein isolation: Paper chromatography
3. Extraction of DNA Techniques
4. Demonstration of DNA separation – Electrophoresis.
5. Mechanism of Replication (visuals)
6. Mechanism of Transcription (visuals)
- Mechanism of Translation (visuals)

## Books Recommended

1. Nelson, D.L. and Cox, M.M. Lehninger's Principles of Biochemistry. W.H. Freeman and Co., New York, 5th ed.
2. Voet, D., Voet, J.G. and Pratt, C.W. Fundamentals of Biochemistry: Life at the Molecular Level. John Wiley and Sons, New York
3. Biochemistry, Stryer
4. Molecular Biology of Cell, Bruce Alberts
5. Lodish et al: Molecular Cell Biology
6. Principles of Genetics, D. Peter Sinustad & Michael J Simmon, Wiley & Sons, Inc
7. Dobzhansky: Genetics and origin of species
8. Brooker, R.J. Genetics, Principles and Analysis. Addison Wesley Longman, California.
2. Cummings, M.R. (2009). Human Genetics. Cenage Learning, USA.
9. Gardner, E.J. Human Genetics. Viva Books Pvt. Ltd., India.
10. Klug, W.S. and Cummings, M.R. Concepts of Genetics. Pearson Education, Inc., New Delhi.
11. Snustad, D.P. and Simmons, M.J. Principles of Genetics. John Wiley and Sons, Inc., New York.
12. Strickberger, M.W. Genetics. Prentice-Hall India Pvt. Ltd., New Delhi
13. Medical Genetics; Jorde, B; Carey, C; Bamshad; Elsevier Publication
14. Genetics; Elrod, Stansfield; Tata Mc Graw Hill.
15. Human Genetics; Lewis 11<sup>th</sup> Edition, McGraw Hill
16. Genetics: L. Hartwell et al, McGraw Hill.

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