

MOLECULAR AND DEVELOPMENTAL BIOLOGY

Unit I

Fundamentals of Molecular Biology, Kinds of biological molecules, DNA Replication, DNA Repair and DNA Recombination.

Unit II

Transcription and Translation in prokaryotes and Eukaryotes. RNA Processing, Nuclear Transport, and Post-Transcriptional Control.

Unit III

Transport across Cell Membranes, Cell Motility and Shape, Microfilaments, microtubules.

Cell-to-Cell Signaling: Hormones and Receptors.

Unit IV

Life cycles and the evolution of developmental patterns, The genetic core of development: Differential gene expression

Unit V

Early development in *Xenopus laevis*, *Caenorhabditis elegans*, *Amphioxus* and chicken, Later embryonic development. Overview of plant development.

Suggested reading:

1. [Molecular Biology of the Cell](#). 4th ed.
Alberts, Bruce; Johnson, Alexander; Lewis, Julian; Raff, Martin; Roberts, Keith; Walter, Peter
New York: [Garland Publishing](#); 2002.
2. [The Cell - A Molecular Approach](#). 2nd ed.
Cooper, Geoffrey M.
Sunderland (MA): [Sinauer Associates, Inc.](#); c2000.
3. [Molecular Cell Biology](#). 4th ed.
Lodish, Harvey; Berk, Arnold; Zipursky, S. Lawrence; Matsudaira, Paul; Baltimore, David; Darnell, James E.
New York: [W. H. Freeman & Co.](#); c1999.
4. [Developmental Biology](#). 6th ed.
Gilbert, Scott F.
Sunderland (MA): [Sinauer Associates, Inc.](#); c2000.
5. Molecular Biology by David Freifelder.