

Govt. College, Ropar

Department of Botany

Class B.Sc. 5th Sem.

(Session 2022-23)

Molecular Biology and Developmental Biology

Week	Lesson scheduled
1 st	<ul style="list-style-type: none">➤ The nature of genetic material: DNA Structure, Watson and Crick-model, Polymorphism of DNA Helix.➤ Replication of DNA: Enzymes and mechanism involved in DNA replication (prokaryotes and eukaryotes), DNA damage and repair.
2 nd	<ul style="list-style-type: none">➤ RNA Processing: Concept of introns and exons, spliceosome machinery and splicing pathways.➤ Transcription: Mechanism of Transcription in Prokaryotes and Eukaryotes.
3 rd	<ul style="list-style-type: none">➤ Translation (Prokaryotes and Eukaryotes): Various steps and mechanism involved in protein synthesis.
4 th	<ul style="list-style-type: none">➤ Transcription Regulation: Principles of transcriptional regulation in prokaryotes with examples from lac and trp operons. Transcription Regulation in Eukaryotes.
5 th	<ul style="list-style-type: none">➤ Recombinant DNA technology: Introduction to the concept of Recombinant DNA Technology: Enzymes involved, vectors, transformation techniques (microbial), Construction and screening of DNA libraries.
6 th	<ul style="list-style-type: none">➤ Application of recombinant DNA technology: Application in medicine: vaccines, detection of genetic diseases (Sickle cell anemia), gene therapy.
7 th	<ul style="list-style-type: none">➤ MST
8 th	<ul style="list-style-type: none">➤ MST
9 th	<ul style="list-style-type: none">➤ Historical perspective and basic concepts: Phases of development, Cell-Cell interaction, Pattern formation, Differentiation and growth, Differential gene expression, Cytoplasmic determinants and asymmetric cell division➤ Implications of Developmental Biology: Teratogenesis: Teratogenic agents and their effects on embryonic development.

2022-23

Continued.

10 th	<ul style="list-style-type: none"> ➤ Gametogenesis: Spermatogenesis, structure of sperm, variations in sperm structure, significance of spermatogenesis. Oogenesis, structure and functions of egg. Vitellogenesis, functions of yolk, Types of eggs
11 th	<ul style="list-style-type: none"> ➤ Egg membranes; Fertilization: mechanism and significance of fertilization, Monospermy and polyspermy, Blocks to polyspermy; Planes and patterns of cleavage; Morula and morulation, Blastula and blastulation, Types of Blastula.
12 th	<ul style="list-style-type: none"> ➤ Development of frog and chick upto gastrulation; Morphogenetic movements: Types and examples. ➤ Organizer: Speman-Mangold organiser experiment; concept of induction, determination, and differentiation Fate of Germ Layers
13 th	<ul style="list-style-type: none"> ➤ Extra-embryonic membranes; Implantation of embryo in humans, Placenta (Structure, physiology, types and functions of placenta)
14 th	<ul style="list-style-type: none"> ➤ Metamorphosis: Changes, hormonal regulations in amphibians and insects; Regeneration: Modes of regeneration, epimorphosis, morphallaxis and compensatory regeneration (with one example each); Ageing: Concepts and Theories.
15 th	<ul style="list-style-type: none"> ➤ Control of Development: Fundamental processes in development (brief idea) - Gene activation, determination, induction, Differentiation, morphogenesis, intercellular communication, cell movements and cell death



Surinder singh

Dept. of Zoology



Principal

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Class B.Sc. 6th Sem.

(Session 2022-23)

Medical zoology and medical lab technology

Week	Lesson scheduled
1 st	➤ Introduction to Parasitology (pertaining to various terminologies in use).
2 nd	➤ Brief accounts of life history, mode of infection and pathogenicity of the various pathogens with reference to man; prophylaxis and treatment:
3 rd	➤ Pathogenic protozoans: Entamoeba, Trypanosoma, Leishmania
4 th	➤ Pathogenic protozoans: Giardia, Trichomonas and Plasmodium.
5 th	➤) Pathogenic helminthes: Fasciolopsis, Schistosoma, Echinococcus, Ancylostoma,
6 th	➤) Pathogenic helminthes: Ancylostoma, Trichinella, Wuchereria, Dracunculus and Oxyuris.
7 th	➤ Life cycle and control measures of arthropod vectors of human diseases: Haemorrhagic fever (Aedes); Filariasis and Japanese Encephalitis (Culex).
8 th	➤ Life cycle and control measures of arthropod vectors of human diseases: Malaria (Anopheles) Yellow fever and Dengue, (Aedes)
9 th	➤ MST
10 th	➤ MST
11 th	➤ Laboratory techniques: Colorimetry, Microscopy, Autoclaving, Centrifugation, Spectrophotometry.
12 th	➤ Haematology: Collection of blood (Venous and Capillary), Anticoagulants (merits and demerits). Romanowsky's stains.
13 th	➤ Haematology: Total RBC count, Erythrocyte sedimentation rate, TLC. DLC, Eosinophil count, Platelet count, Reticulocyte count.
14 th	➤ Biochemistry: Protein estimation, estimation of blood urea, sugar and cholesterol, serum creatinine and uric acid, urine analysis; test.
15 th	➤ Biochemistry: estimation of protein, sugar, bile salts, bile pigments, ketone bodies; enzyme studies (serum transaminase, phosphatase, amylase and lipase), liver function

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16 th	➤ Histopathology: Common fixatives and staining techniques,
17 th	➤ Histochemistry: Principle and method: Staining of carbohydrates, proteins and fats with bromo phenol blue, Periodic acid Schiff, Sudan Black blue and Feulgen reaction
18 th	➤ Histochemistry: Principle and method: Staining of carbohydrates, proteins and fats with bromo phenol blue, Periodic acid Schiff, Sudan Black blue and Feulgen reaction



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