Govt. College, Ropar

Department of Zoology

Class B.Sc. 3rd Sem.5 Session :2019-20

Developmental Biology and Genetics

Week	Lesson scheduled
1st	Gametogenesis with particular reference to differentiation of spermatozoa : vitellogenesis, role of follicle/ subtesticular cells in gametogenesis.
2nd	Egg maturation : egg membranes, polarity of egg.
3rd	Fertilization; parthenogenesis, Cleavage patterns.
4th	Basic concepts of organizers and inducers and their role.
5th	Embryonic development: Cleavage, determination and differentiation, development upto three germ layers and their fate in *Herdmania, Amphioxus,* frog, .
6th	Embryonic development: Cleavage, determination and differentiation, development upto three germ layers and their fate in chick and rabbit. Metamorphosis in *Herdmania* and Rana (Frog).
7th	Foetal membranes, their formation and role. Mammalian placenta, its formation, types and functions.
8th	➢ MST
9th	➢ **Mst**
10th	Modification of Mendelian ratios : Non-allelic gene interaction, Modified F_2 ratios (9 : 7, 9 : 3 : 4, 12 : 3 : 1, 13 : 3)
11th	Modification of Mendelian ratios : Non-allelic gene interaction, Modified F_2 ratios (15 : 1, 9 : 6 : 1). Gene modifications due to incomplete dominance, lethal factors (2:1), Pleiotropic gene.
12th	Multiple Alleles – Blood group inheritance, eye colour in *Drosophila*, pseudo-allelism.
13th	Multiple factors : Qualitative and quantitative characters, Inheritance of quantitative traits (skin colour in man).
14th	Extranuclear inheritance : Chloroplast with special reference to *Mirabilis jalapa* and Kappa particles in *Paramecium*.
15th	Population Genetics : Equilibrium of gene frequencies and Hardy Weinberg Law.
16th	Genetic recombination in bacteria (conjugation, transduction and transformation),
17th	Recombinant DNA –technology, Genetic cloning and its applications in medicine and agriculture, DNA finger printing.

Prof. Manjit Kaur Manchanda

Head of department

Dept of Zoology

Principal
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Department of ZOOLOGY

Class B.Sc. 6th Sem. **Session (2019-20)**

MEDICAL ZOOLOGY AND IMMUNOLOGY

Week	Lesson scheduled
1st	Introduction to Parasitology (pertaining to various terminologies in use).Brief Introduction to pathogenic microbes. Viruses, Ricketsiae, Spirochaetes and Bacteria.
2nd	Brief accounts of life history, mode of infection and pathogenicity of the following pathogens with reference to man; prophylaxis and treatment : a. Pathogenic protozoans : *Entamoeba, Trypansoma, Leishmania, Giardia, Trichomonas* and *Plasmodium.*
3rd	Brief accounts of life history, mode of infection and pathogenicity of the following pathogens with reference to man; prophylaxis and treatment : *b.* Pathogenic helminthes : *Fasciolopsis. Schistosoma, Echinococcus, Ancylostoma, Trichinella, Wuchereria, Dracunculus* and *Oxyuris.*
4th	Life cycle and control measures of arthropod vectors of human diseases : Malaira *(Anopheles stephensi, A culicifacies)* Yellow fever and Dengue, Haemorrhagic fever (*Aedes aegypti, A. albopictus*)
5th	Life cycle and control measures of arthropod vectors of human diseases : Filariasis *(Culex pipiens fatigans)Mansonia sp.*, Japanese Encephalitis *(C. trinaenilorhynchus).*
6th	Epidemic deiseases such as typhoid, cholera, small pox; their occurrence and eradiction programmes.
7th	Brief introduction to human defence mechanisms. Humoral and cell mediated immune-response, Antigens-physical & chemical properties. Antibodies-structure and function of immunoglobulin M, G, A, E and D.
8th	Antigen and antibody interactions : Serodiagnostic assays. Vaccines.
9th	**MST**
10th	MST
11th	Laboratory safety rules, hazards and precautions during sample collection and laboratory investigations. Laboratory techniques : Colorimetry, Microscopy, Autoclaving,
12th	Laboratory techniques : Centrifugation, Spectrophotometry. Collection, Transportation and Preservation of different clinical samples.
13th s	Bacteriology : Sterilisation, (dry heat, moist heat, autoclave, filtration), Disinfection, Staining techniques (gram's stain, AFB stain, etc), Culture media (Defined & Synthetic media & routine laboratory media), Bacterial

	culture (aerobic and anaerobic), antibiotic sensitivity.
14th	Haematology : Collection of blood (Venous and Capillary), Anticoagulants (merits and demerits). Romanowsky's stains. Total RBC count, Erythrocyte sedimentation rate, TLC, DLC, Eosinophil count, Platelet count, Reticulocyte count.
15th	Biochemistry : Protein estimation, estimation of blood urea, sugar and cholesterol, serum creatinine and uric acid, urine analysis; estimation of protein,
16th	Biochemistry : sugar, bile salts, bile pigments, ketone bodies; enzyme studies (serum transaminase, phosphatase, amylase and lipase), liver function test.
17th	Histopathology : Common fixatives and staining techniques, Histochemistry : Principle and method : Staining of carbohydrates, proteins and fats with bromo phenol blue, Periodic acid Schiff, Sudan Black blue and Feulgen reaction

Manjeet kaur manchanda

Head of department

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