

LS 531A Molecular Parasitology and Infectious Diseases 2 Credits

Name of the Faculty : Prof. A.S. Kharat*, Dr. A. Bansal

Sr.No.	Topic	Faculty Name/ Contact Hours
1.	Introduction to pathogens and Infectious diseases: nature of pathogens and modes of infection	ASK/2
2.	Cellular structure and genome organization of bacterial and parasitic pathogens	ASK/2
3.	Host-Pathogen Interaction: pathogenesis, treatment / targets & resistance	
	<p>Bacterial Infections:</p> <p>A. Pulmonary: Pneumonia–atypical, chemically triggered/allergic/bacterial; <i>Streptococcus pneumoniae</i> – adherence and Invasion; pathogenesis, epidemicity; vaccine; treatment. Tuberculosis –socio-economic considerations, pathogenesis –virulence and immune factors; treatment; drug resistance; preventive measures.</p> <p>B. Enteric: Enteric pathogens, Enteritis –causative agents; opportunistic infections, virulence and immune system; toxins; treatment. Definition; types of infection; epidemiology; prophylactic measures; treatment options.</p> <p>C. Antibiotics: definition; classification; targets & action. Antibiotic resistance: social, environmental and global concern; causes; mechanisms –enzymes, traits, vertical OR horizontal inheritance; challenges & opportunity.</p> <p>D. Bacterial toxins & toxinosis: septic shock. Advanced diagnostics of bacterial infections.</p>	ASK/12
	<p>Parasitic infections:</p> <p>A. Introduction of parasitic infectious diseases and classification. Sarcomastigophora (<i>Entamoeba</i>, <i>Leishmania</i> and <i>Trypanosoma</i>), Sporozoa (Apicomplexans e.g., <i>Plasmodium</i>, <i>Toxoplasma</i>); ciliophoran (<i>Balantidium</i>)</p> <p>B. Specialized organelles: acidocalcisomes, apicoplast, apical organelles, hydrogenosomes, glycosomes</p> <p>C. Virulence factors in protozoan parasite, vaccine and drug targets, drug resistance mechanism.</p> <p>D. Molecular mechanisms involved during host-parasite interactions.</p> <p>E. Host immune response to parasitic infections, antigenic variation and immune evasion strategies.</p> <p>F. Recent advances in molecular analysis of host-parasite interactions.</p>	AB/16

Further Reading:

1. General Microbiology, 6th edition, Roger Y Stanier
2. Prescott's Microbiology, 10th edition, Willey JM, Sherwood LM and Woolverton CJ, McGraw Hill, 2017
3. Molecular Parasitology: Protozoan parasites and their Molecules. Walochnik, J, Duchene M, 2016
4. Antimicrobial Drug Resistance: Mechanism of Drug Resistance Volume I (Infectious diseases): 2009, Douglas Mayer et al.
5. Malaria: biology in the era of eradication, 2017, Dyann Fergus Wirth, CSHL Press