LSC 523 - Molecular Virology

1. Evolution and classification of viruses, organization of viruses; Protein structure and assembly, nucleic acid packaging, geometrical aspects, icosahedral and helical symmetry.

2. Virus attachment and entry in to host cells.

3. Cellular and molecular biology of host virus interaction.

4. Genome replication strategies and mRNA production by RNA viruses.

5. Reverse transcription and integration in to the host genome (retroviruses).

6. DNA virus replication strategies.

7. Unique features of viral gene expression.

8. Translational control of viral gene expression.

9. Viral pathogenesis and cell transformation by viruses.

10. Viral genetics, host specific and nonspecific defense mechanisms involved in resistance to and recovery from virus infections.

11. Role of interferon in viral infections, contributions of various host defense mechanisms in viral infections; viral chemotherapy, nucleoside analogs, reverse transcriptase inhibitors, protease inhibitors, viral vaccines.

12. *Hepadnaviruses, HIV, Polyomaviruses (SV40), Baculovirus, Topsoviruses, Potyviruses, Geminiviruses, Herpesviruses, Adenoviruses,* and *Bromoviruses.*

13. Subviral pathogens: Hepatitis D virus (HDV), prions, viroids.

14. Viral vectors and gene therapy.

Suggested Readings

1. Principles of Virology: Molecular Biology, Pathogenesis and Control of Animal Viruses - by S.J. Flint,L.W. Enquist, V.R. Racaniello, and A.M. Skalka,
2. Introduction to Modern Virology EPZ - by Nigel Dimmock, Andrew Easton and Keith Leppard, Blackwell Publishing
3. Basic Virology - by Edward K. Wanger, Martinez Hewiett, David Bloom and David Camerini, Blackwell Publishing
4. Principles of Molecular Virology - by Alan J. Cann, Elsevier Academic Press
5. Plant Virology - by Roger Hull, Academic press