

LSC 504 – BIOPHYSICS AND STRUCTURAL BIOLOGY

1. Introduction, interaction in biology systems.
2. Structure of biomolecules, confirmations of protein and nucleic acids.
3. Secondary, tertiary and quaternary structure of protein.
4. Primary and secondary structure of RNA and DNA.
5. Method of conformational analysis and prediction of conformation.
6. Thermodynamics and kinetics of conformational transition of proteins.
7. Protein folding, techniques for studying macromolecular structure, ultra centrifugation, sedimentation velocity and equilibrium, determination of molecular weights.
8. Electron microscopy, TEM, SEM.
9. UV-Visible Spectroscopy, fluorescence spectroscopy.
10. Circular Dichroism spectroscopy, XRD, FTIR.
11. Symmetry, space group crystal lattices, Brag's law in real & reciprocal space.
12. Nuclear magnetic resonance.

Suggested Readings

1. Biophysical Chemistry - by Cantor & P. Schimmel, Vol. I & II
2. Physical Biochemistry - by David I Reifelder
3. Protein: Structure and Molecular Properties - by TE Creighton