

Title: Molecular Biology [2-1-0-6]

Pre-requisites, if any: BB101

Content (*List of the topics/sub-topics to be covered in the lectures/practicals/assignments*):
Nucleic acids, DNA structure, central dogma; Replication: eukaryotic and prokaryotic replication, mechanism and control, replication of double stranded and single stranded circular DNA, the end-replication problem and telomerase; Nucleosomes: eukaryotic and prokaryotic genome packing, heterochromatin, euchromatin; Transcription: mechanism of RNA transcription in prokaryotes and eukaryotes; model systems of transcriptional control: lac operon, lambda phage; promoters, enhancers, repressors; RNA processing: processing of heterogeneous nuclear RNA: splicing, capping, polyadenylation; Translation: universal genetic code, degeneracy of codons, mechanisms of initiation, elongation and termination of translation, wobble hypothesis, genetic code in mitochondria; Mutations: nonsense, missense, frameshift and point mutations; intragenic and intergenic suppression; DNA repair: photoreactivation, excision, mismatch and SOS repair; Recombination: mechanism of homologous recombination in prokaryotes, site specific recombination, insertion sequences, transposons.

Texts / References

- Robert F. Weaver, Molecular Biology 3rd Edition, McGraw-Hill, 2003.
- Benjamin Lewin, Genes IX. Jones and Bartlett Publishers, 2007.