

Molecular Biology of the Gene
(BCH 550- 3+0)

Review of the gene and its structure, transcription, replication and translation in prokaryotic cell, eukaryotic cell and viruses. Cell differentiation and the cell control of cell proliferation at the molecular level.

Topics
Elements of DNA: genes, pseudo-genes transposable elements, repetitive DNA, etc. Eukaryotic and prokaryotic genome; Fundamental features of eukaryotic and prokaryotic genes
DNA replication: the cell cycle; control and defects, apoptosis. DNA repair: mechanisms, methods to study DNA repair, syndromes.
Chromosome mutations: introduction, changes in chromosome number, chromosomal rearrangements, the overall incidence of human chromosome mutations and structure of the human of the genome.
Transcription: machinery and regulation (activators and repressors, histone modification, methylation). Epigenetic modification of the genome. Control of gene expression. RNA interference as a mechanism for control of gene expression, splicing and connections with human diseases.
Translation: mechanisms, regulation, post-translational modifications
Epigenetic
Bioinformatics.

Reference:

Lewin's GENES XI 11th Edition, 2013, Publisher: Jones & Bartlett Learning