

BIO-634 Molecular Medicine

Content : A graduate level course that aims at analyzing molecular mechanisms of disease. Mechanisms leading to disease and observed molecular changes will be dissected in diseases such as cancer, Alzheimer's, Parkinson's and Huntington's disease, infectious diseases and some inherited diseases. The lectures will involve discussion of recent advances in the light of current literature. Genetic and environmental causes of cancer, cancer types, molecular changes causing cancer, metastasis, treatment of cancer, genetics and molecular mechanisms leading of Alzheimer's, Parkinson's and Huntington's disease, major causes of infectious diseases, viruses, bacteria and parasites, molecular mechanisms of AIDS, hepatitis and common bacterial infections, genetic basis of inherited disease, common genetic diseases and molecular mechanisms will be covered during the course.

Syllabus:

Week	Subject
1-2	Genetic Disorders
	Single-Gene Disorders
	Autosomal Dominant Disorders (Polycystic Kidney Disease, Marfan's Syndrome, Huntington's Disease etc.)
	Autosomal Recessive Disorders (Cystic Fibrosis, Phenylketonuria, Gaucher Disease, Ichthyosis, Tay-Sachs Disease etc.)
	Polygenic Disorders (Asthma, Diabetes Mellitus)
3-4	Molecular Biology of The Most Common Cancer and Its Clinical Implications
	Breast, Lung, Hepatocellular Carcinoma, Colorectal Cancer, Prostate Cancer etc.
5	Molecular Biology of Cardiovascular Diseases
6	Molecular Virology
	HIV, Hepatitis Virus, Influenza Virus, Prions,
	Antiviral Therapy
7	Bacteria and Eukaryotic Pathogens
	Pathogenic Bacteria, Eukaryotic Pathogens
	Bacterial Vaccines, Diagnostic, and Antibiotics
8-9	Pharmacogenetics/Pharmacogenomics
	Uptake and Transport of Drugs, Drug Metabolism, Drug Toxicity and Hypersensitivity, Drug Development
10-11	Recombinant Protein Drugs
	Production of Recombinant Proteins, Classes of Recombinant Drugs,
12-13	Gene Therapy
	Types of Gene Therapy, Methods of Gene Transfer, Applications of Gene Therapy
14	Antisense, Ribozyme, RNA Interference, microRNA Strategies and Clinical Applications
14	Ethics in Molecular Medicine

Course materials

Suggested textbook:

Molecular Medicine - An Introduction, Author: Jens Kurreck, Cy Aaron Stein
ISBN: 9783527675098