

TOPICS IN RADIATION AND CANCER BIOLOGY (LS641A)

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S. No.	Topics	Contact hours
1.	Radiation and tissue sensitivity	2 ABT
2.	Low dose radiation effects	2 ABT
3.	Radiosensitizers and protectors	2 ABT
4.	Heritable effects of radiation	2 ABT
5.	Radiation-induced carcinogenesis and therapy	1 ABT
6.	Radiation and cell signaling	2 ABT/RPS
7.	Experimental approaches in cancer research [<i>in vitro</i> (cell line spheroids, and organoids) and <i>in vivo</i> models]	2 RPS
8.	Oncogenes such as Ras, Src, Wnt, etc.	3 NM
9.	Tumor suppressor genes such as p53, and Rb-E2F interaction	2 NM
10.	Cell cycle regulation in cancer	4 NM
11.	Cellular signaling in cancer	4 NM/RPS
12.	Epigenetic mechanisms: DNA and histone modification, microRNA and lncRNA in cancer	2 NM/RPS
13.	Death receptors, mitochondrial proteins, caspase (apoptosis) and cancer	2 RPS
14.	Mechanisms of tumor angiogenesis, invasion and metastasis	4 RPS/NM
15.	Cancer Stem cells	2 RPS

Suggested Readings:-

1. Molecular Biology of Human Cancers by Wolfgang Arthur Schulz, Springer.
2. Biology of Cancer by Robert A. Weinberg, Norton, W. W. & Company, Inc. Publisher
3. Chemoprevention of Cancer and DNA Damage by Dietary Factors by S. Knasmuller, David M. DeMarini, Ion Johnson, and Clarissa Gerhauser, Willey Blackwell Publisher
4. Nature Reviews Cancer on selected topics.