

Title: Cell Cycle and Epigenetics [3-0-0-6]

Pre-requisites, if any: Cell Biology

Content (*List of the topics/sub-topics to be covered in the lectures/practicals/assignments*):

Overview of cell cycle, cell cycle of model organisms, events of eukaryotic cell cycle - chromosome duplication and control of replication once per cell cycle, assembly of mitotic spindle, kinetochore capture and sister chromatid bi-orientation, chromosome segregation, mitotic exit, genetic control of cell cycle, meiotic cell cycle, Unregulated cell cycle: Cancer.

Epigenetics and its tools. Histone modification, RNAi and heterochromatin formation, chromatin remodelling and importance of histone variants, DNA modification, epigenetic regulation of centromere identity and chromosome inheritance; dosage compensation and genomic imprinting in Mammals.

Texts / References

- The Cell Cycle: Principles of control. David O Morgan. Publisher: New Science Press limited. 1st Edition, 2007
- The cell: A molecular approach G, Cooper (8th Ed) 2019. Oxford University Press
- Cell Cycle Control: Mechanisms and Protocols (Methods in Molecular Biology Vol296) Tim Humphrey (Editor), Gavin Brooks (Editor). Publisher: Humana Press 2010
- Epigenetics . By C. David Allis, Thomas Jenuwein Danny Reinberg , Marie-Laure Caparros . Publisher: CSHL press 2nd Edition, 2015
- Handbook of Epigenetics: The New Molecular and Medical Genetics. By Trygve Tollefsbol (Editor). Publisher: Academic Press. 1st Edition, 2010